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# ANNUAL REPORTS

OF THE

# WAR DEPARTMENT

FOR THE

FISCAL YEAR ENDED JUNE 30, 1900.

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## REPORTS OF CHIEFS OF BUREAUS.

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WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1900.

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# ARRANGEMENT OF THE ANNUAL REPORTS OF THE WAR DEPARTMENT FOR THE YEAR ENDING JUNE 30, 1900.

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NOTE.—The annual reports of Maj. Gen. Henry C. Corbin, Adjutant-General U. S. A., and Brig. Gen. Joseph C. Breckinridge, Inspector-General U. S. A., to the Lieutenant-General Commanding the Army, are published in volume 1, part 3.

The operations of the War Records Office are contained in the report of Brig. Gen. Fred C. Ainsworth, Chief of the Record and Pension Office.

# REPORT OF THE ADJUTANT-GENERAL TO THE SECRETARY OF WAR.

# ANNUAL REPORT

OF THE

# ADJUTANT-GENERAL OF THE ARMY.

---

War Department,
Adjutant-General's Office,
*Washington, October 20, 1900.*

Sir: The following returns of the Regular Army and of the United States Volunteers now in the service of the United States are respectfully submitted:

A.—General return, or exhibit, showing the actual strength of the Army according to the latest returns received.

B.—Distribution of the Army of the United States.

C.—Statement showing the monthly strength and losses from all causes in the Army of the United States between July 1, 1899, and June 30, 1900.

D.—Strength of the Army by divisions and departments between July 1, 1899, and June 30, 1900.

E.—Strength of the Regular Army of the United States June 30, 1899, and June 30, 1900, with losses from all causes between those dates.

F.—Strength of the volunteers of the United States June 30, 1900, with losses from all causes since July 1, 1899.

G.—Deaths in the Army of the United States between July 1, 1899, and June 30, 1900.

H.—Table showing dates of sailing and troops sent to the Philippine Islands.

I.—Casualties in actions of troops serving in China between July 1 and October 1, 1900.

K.—Chronological list of actions, with losses, in the Philippine Islands, between February 4, 1899, and June 30, 1900.

L.—List of retirements, resignations, deaths, etc., among officers of the Army since last annual report.

M.—Deaths in the Philippine Islands between February 4, 1899, and June 30, 1900.

N.—Statistical exhibit of strength of volunteer forces called into service during the war with Spain, with losses from all causes.

The military forces now in the service of the United States are composed as follows:

### REGULAR ARMY.

| | Officers. | Enlisted men. | Total. | Officers holding commissions in volunteers. |
|---|---|---|---|---|
| General officers | 8 | .......... | 8 | 1 |
| Adjutant-General's Department | 15 | .......... | 15 | 2 |
| Inspector-General's Department | 9 | .......... | 9 | 1 |
| Judge-Advocate-General's Department | 8 | .......... | 8 | 1 |
| Quartermaster's Department | 58 | 105 | 163 | 19 |
| Subsistence Department | 22 | 173 | 195 | 3 |
| Medical Department | 180 | [a] 4,360 | 4,540 | 25 |
| Pay Department | 26 | .......... | 26 | .......... |
| Corps of Engineers | 126 | 687 | 813 | 1 |
| Ordnance Department | 61 | 664 | 725 | .......... |
| Signal Corps | 11 | 748 | 759 | 6 |
| Chaplains | 30 | .......... | 30 | .......... |
| Record and Pension Office | 2 | .......... | 2 | .......... |
| Military Academy | .......... | 279 | 279 | .......... |
| Electrician sergeants | .......... | 42 | 42 | .......... |
| Total | 556 | 7,058 | 7,614 | 59 |
| Ten regiments of cavalry | 472 | 12,083 | 12,555 | 67 |
| Seven regiments of artillery | 351 | 10,978 | 11,329 | 29 |
| Twenty-five regiments of infantry | 1,156 | 35,428 | 36,584 | 78 |
| Indian scouts and recruits | .......... | 2,674 | 2,674 | .......... |
| Grand total | 2,535 | 63,861 | 66,396 | [b] 233 |

### UNITED STATES VOLUNTEERS.

| | Officers. | Enlisted men. | Total. | Officers holding commissions in Regular Army. |
|---|---|---|---|---|
| General officers and staff corps | 263 | .......... | 263 | 102 |
| One regiment of cavalry | 50 | 1,025 | 1,075 | 5 |
| Squadron Philippine cavalry | 15 | 451 | 466 | 3 |
| Twenty-four regiments of infantry | 1,189 | 28,724 | 29,913 | 118 |
| Porto Rico regiment | 31 | 879 | 910 | 5 |
| Total | 1,548 | 31,079 | 32,627 | [b] 233 |

### RECAPITULATION.

| | |
|---|---|
| Regular Army | 66,396 |
| United States Volunteers | 32,627 |
| | 99,023 |
| | [b] 233 |
| Grand total | 98,790 |

---

[a] The Hospital Corps is not included in the effective strength of the Army, nor counted as a part of the enlisted force provided by law.

[b] The number of officers in the Regular Army holding volunteer commissions is deducted from aggregate strength to avoid counting twice.

The following statement gives the present distribution of the regular and United States Volunteer forces:

| | United States. | | Alaska. | | Porto Rico. | | Cuba. | | Philippine Islands. | | Hawaiian Islands. | | China. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. |
| **REGULAR ARMY.** | | | | | | | | | | | | | | |
| General officers and staff corps... | 351 | 2,707 | 2 | 120 | 11 | 104 | 18 | 341 | 97 | 3,627 | 1 | 17 | 17 | 142 |
| Cavalry... | 120 | 2,940 | 2 | ...... | 13 | 359 | 139 | 3,492 | 119 | 4,892 | .... | ........ | 12 | 400 |
| Artillery... | 227 | 6,663 | 1 | ...... | 6 | 195 | 26 | 886 | 54 | 2,868 | 4 | 202 | 4 | 164 |
| Infantry... | 224 | 3,914 | 32 | 968 | 31 | 869 | 39 | 749 | 717 | 27,574 | .... | ........ | 35 | 1,354 |
| Indian scouts... | ..... | 74 | .... | ...... | .... | ...... | ..... | ...... | ...... | ...... | .... | ........ | .... | ...... |
| Recruits... | ..... | 2,600 | .... | ...... | .... | ...... | ..... | ...... | ...... | ...... | .... | ........ | .... | ...... |
| Total... | 922 | 18,898 | 37 | 1,088 | 61 | 1,527 | 222 | 5,468 | 987 | 38,961 | 5 | 219 | 68 | 2,060 |
| **UNITED STATES VOLUNTEERS.** | | | | | | | | | | | | | | |
| General officers and staff corps... | 73 | ...... | 4 | ...... | 6 | ...... | 38 | ...... | 131 | ...... | 1 | ........ | 10 | ...... |
| Cavalry... | 1 | ...... | .... | ...... | .... | ...... | ..... | ...... | 64 | 1,476 | .... | ........ | .... | ...... |
| Infantry... | 2 | ...... | .... | ...... | 31 | 879 | ..... | ...... | 1,185 | 28,724 | .... | ........ | 2 | ...... |
| Total... | 76 | ...... | 4 | ...... | 37 | 879 | 38 | ...... | 1,380 | 30,200 | 1 | ........ | 12 | ...... |
| Grand total... | 998 | 18,898 | 41 | 1,088 | 98 | 2,406 | 260 | 5,468 | 2,367 | 69,161 | 6 | 219 | 80 | 2,060 |

*Deaths in the armies of the United States between July 1, 1899, and June 30, 1900.*

| | United States. | | Alaska. | | Cuba. | | Porto Rico. | | Hawaiian Islands. | | Philippine Islands. | | At sea. | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. |
| Regular Army... | 12 | 219 | ... | 3 | 3 | 146 | ... | 28 | 1 | 3 | 26 | 762 | 2 | 66 | 44 | 1,227 |
| United States Volunteers... | 2 | 45 | ... | ...... | 4 | ...... | ... | 8 | ..... | 1 | 23 | 631 | 1 | 18 | 30 | 703 |
| Total... | 14 | 264 | ... | 3 | 7 | 146 | ... | 36 | 1 | 4 | 49 | 1,393 | 3 | 84 | 74 | 1,930 |

The losses from all causes in the Regular Army, the State and the United States Volunteers from July 1, 1899, to June 30, 1900 (see Table "F"), were as follows:

| | Resigned. | Retired. | Dismissed. | Discharged. | Died. | Deserted. | Missing. | Total. |
|---|---|---|---|---|---|---|---|---|
| **REGULAR ARMY.** | | | | | | | | |
| Officers... | 10 | 60 | 6 | ......... | 44 | ......... | 2 | 122 |
| Enlisted men... | ......... | 123 | ......... | 16,391 | 1,227 | 2,863 | ........ | 20,604 |
| Total... | 10 | 183 | 6 | 16,391 | 1,271 | 2,863 | 2 | 20,726 |
| **STATE AND UNITED STATES VOLUNTEERS.** | | | | | | | | |
| Officers... | 230 | ......... | 6 | ......... | 30 | ......... | ........ | 266 |
| Enlisted men... | ......... | ......... | ......... | 6,201 | 703 | 1,130 | ........ | 8,034 |
| Total... | 230 | ......... | 6 | 6,201 | 733 | 1,130 | ........ | 8,300 |
| Grand total... | 240 | 183 | 12 | 22,592 | 2,004 | 3,993 | 2 | 29,026 |

## THE REGULAR ARMY.

Under the provisions of section 2 of the act approved March 2, 1899, for increasing the efficiency of the regular military establishment, the increase therein provided is to continue in service not later than July 1, 1901, and thereafter the enlisted force of the line of the Army is to be reduced to the number prescribed by prior laws, exclusive of the additions made to the artillery under this act. Unless, therefore, suitable provision is made by Congress to meet the existing emergencies of the military service, the enlisted strength of the Army will, at that date, be reduced to 29,025 men.

In pursuance of the plan, approved by the Secretary of War, of establishing depot battalions for the purpose of drill instruction and recruitment, the following battalions have been ordered home from the Philippine Islands to stations as follows:

*April 1, 1900.*—The first battalion of the Fourteenth Infantry (Companies A, B, C, and D—4 officers and 211 men) sailed on the *Sherman* and arrived at San Francisco on the 26th of that month, Company A taking post at Fort Brady, Mich., and the other three companies at Fort Wayne, Mich.

*June 19, 1900.*—The first battalion of the Eighteenth Infantry (Companies A, B, C, and D—20 officers and 293 men) sailed on the *Hancock*, arriving at San Francisco July 13. The first three companies were assigned to the Presidio, San Francisco, Cal., and Company D to Fort Mason, Cal.

*July 1, 1900.*—The third battalion of the Twenty-third Infantry (Companies I, K, L, and M—5 officers and 182 men) sailed on the *Warren* and arrived at San Francisco July 27, Companies I and L taking station at Fort Douglas, Utah, and Companies K and M at Fort D. A. Russell, Wyo.

## THE VOLUNTEER ARMY.

Of the 200,000 men called into the military service under the act of Congress dated April 22, 1898, for the prosecution of the war then existing between the United States and Spain, all had been mustered out of service at the date of last report with the exception of the First Tennessee Infantry. That regiment, then en route for the United States, was mustered out at San Francisco November 23, 1899.

## UNITED STATES VOLUNTEERS.

Of the additional military force of 35,000 men authorized by the act of March 2, 1899, the Eleventh Cavalry and the Twenty-sixth to the Thirty-second Infantry, inclusive, were in service in the Philippines at the date of the last report. The other organizations of that force arrived at Manila on the date set opposite each regiment, as follows:

| Organization. | Date. | Organization. | Date. |
|---|---|---|---|
| Thirty-fourth Infantry | Oct. 11, 1899 | Forty-sixth Infantry | Dec. 15, 1899 |
| Thirtieth Infantry | Oct. 21, 1899 | Forty-third and Forty-fourth Infantry | Dec. 19, 1899 |
| Twenty-sixth Infantry | Oct. 24, 1899 | Forty-seventh Infantry | Dec. 22, 1899 |
| Twenty-seventh, Thirty-second, and Thirty-third Infantry | Oct. 27, 1899 | Thirty-eighth and Fortieth Infantry | Dec. 27, 1899 |
| Twenty-ninth Infantry | Nov. 2, 1899 | Forty-second Infantry | Dec. 31, 1899 |
| Thirty-fifth Infantry | Nov. 7, 1899 | Forty-ninth Infantry | Jan. 2, 1900 |
| Twenty-eighth Infantry | Nov. 23, 1899 | Forty-first Infantry | Jan. 5, 1900 |
| Thirty-first Infantry | Nov. 27, 1899 | Forty-eighth Infantry | Jan. 25, 1900 |
| Thirty-ninth and Forty-fifth Infantry | Dec. 7, 1899 | | |

In view of the briefness of the unexpired service of the volunteers it was thought proper to discharge those who had been invalided to San Francisco from time to time, rather than return them to duty in the Philippine Islands.

On September 6, 1900, there were 435 invalided volunteers in the Department of California—234 in general hospitals, 164 at the Presidio, San Francisco, and 37 at Fort Mason; 385 being reported as convalescent and able to travel were discharged.

To avoid confusion and guard against loss of records, instructions were given for careful preparation of descriptive lists of discharged men with notations relating to discharge, pay due, etc., to be listed by regiments and filed at department headquarters pending arrival of the regiments for discharge. All discharged volunteer soldiers able to travel with comfort and safety as to health were encouraged to go directly to their homes, and every assistance to this end was given them. Special terms were effected with the railroads, the rate to Chicago being made at $43.75 from San Francisco, a reduction of nearly 17 per cent on the regular fare (the best that could be obtained), and arrangements were made whereby tickets would be sold to the men at the military posts.

To meet the many requests of officers and men of the United States Volunteers who desire to leave the military service to engage in business in the Philippines and cast their fortunes with those islands, the Secretary of War, on October 18, 1900, authorized the commanding general of the Division of the Philippines to accept their resignations or order their discharges.

## MILITARY GEOGRAPHICAL DEPARTMENTS.

The present territorial limits of the military geographical departments are as follows:

*Division of the Philippines.*—The Philippine Islands.

*Department of Alaska.*—The Territory of Alaska.

*Department of California.*—The States of California and Nevada, and the Hawaiian Islands.

*Department of the Colorado.*—The States of Wyoming (except so much thereof as is embraced in the Yellowstone National Park), Colorado, and Utah, and the Territories of Arizona and New Mexico.

*Department of the Columbia.*—The States of Washington, Oregon, Idaho (except so much of the latter as is embraced in the Yellowstone National Park).

*Department of Dakota.*—The States of Minnesota, North Dakota, South Dakota, Montana, and so much of Wyoming and Idaho as is embraced in the Yellowstone National Park.

*Department of the East.*—The New England States, New York, New Jersey, Pennsylvania, Delaware, Maryland, District of Columbia, West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, and Louisiana.

*Department of the Lakes.*—The States of Wisconsin, Michigan, Illinois, Indiana, Ohio, Kentucky, and Tennessee.

*Department of Mindanao and Jolo.*—Includes all the islands of the Philippine Archipelago not embraced in the Departments of Northern Luzon, Southern Luzon, and of the Visayas.

*Department of the Missouri.*—The States of Iowa, Nebraska, Missouri, Kansas, and Arkansas, the Indian Territory, and the Territory of Oklahoma.

*Department of Northern Luzon.*—Includes all that part of the island of Luzon north of Laguna de Bay and the province of Laguna, the same being the provinces of Abra, Bontoc, Benguet, Bataan, Bulacan, Cagayan, Ilocos, Infanta, Morong, Norte, Ilocos Sur, La Isabela de Luzon, Lepanto, La Union, Nueva Vizcaya, Nueva Ecija; all that portion of Manila north of the Pasig River, Principe, Pangasinan, Pampanga, Tarlac, and Zambales, and all the islands in the Philippine Archipelago north of Manila Bay and the provinces above named.

*Department of Porto Rico.*—The island of Porto Rico and the islands and keys adjacent thereto.

*Department of Southern Luzon.*—Includes island of Samar and all the remaining part of the island of Luzon, the same including the following provinces: Albay, Batangas, Camarines Norte, Camarines Sur, Cavite, La Laguna, Manila south of the Pasig, and Tayabas, and all islands of the Philippine archipelago which lie south of the south line of the Department of Northern Luzon, as above described, including the island of Polillo, and north of a line passing southeastwardly through West Pass of Apo to the twelfth parallel of north latitude; thence easterly along said parallel to 124° 10′ east of Greenwich, but including the entire island of Masbate; thence northerly through San Bernardino Straits.

*Department of Texas.*—The State of Texas.

*Department of the Visayas.*—Includes all islands (except island of Samar) south of the southern line of the Department of Southern Luzon and east of longitude 121° 45′ east of Greenwich and north of the ninth parallel of latitude, excepting the island of Mindanao and all islands east of the Straits of Surigao; headquarters, Iloilo, P. I.

The strength of the above-named divisions and departments was as follows June 30, 1900:

| | Officers. | Enlisted men. | Total. |
|---|---|---|---|
| Division of— | | | |
| Cuba | 435 | 9,421 | 9,856 |
| The Philippines | 2,343 | 61,083 | 63,426 |
| Department of— | | | |
| Alaska | 33 | 1,002 | 1,035 |
| California | 67 | 1,364 | 1,431 |
| The Colorado | 70 | 1,844 | 1,914 |
| The Columbia | 33 | 984 | 1,017 |
| Dakota | 51 | 1,120 | 1,171 |
| The East | 264 | 7,728 | 7,992 |
| The Lakes | 58 | 1,408 | 1,466 |
| The Missouri | 80 | 2,392 | 2,472 |
| Porto Rico | 132 | 3,204 | 3,336 |
| Texas | 31 | 1,169 | 1,200 |
| Total | 3,597 | 92,719 | 96,316 |

## CUBA.

*Division of Cuba.*—Consists of the geographical departments and provinces of the island of Cuba.

*Department of Eastern Cuba.*—The provinces of Santiago and Puerto Principe.

*Department of Western Cuba.*—The provinces of Habana, Pinar del Rio, Matanzas, and Santa Clara.

The following is a summary of the movements of troops from and to the island of Cuba:

### FROM CUBA.

*September 13, 1899.*—Companies A, B, C, and D, First Infantry, for Fort Leavenworth, Kans.; headquarters and Companies I, K, L, and M, Eighth Infantry, for Fort Snelling, Minn.

*September 17, 1899.*—Companies E, F, G, and H, Second Infantry, for Fort Thomas, Ky.

*September 20, 1899.*—Companies I, K, L, and M, Tenth Infantry, for Fort Crook, Nebr. (Home battalion.)

*September 23, 1899.*—Companies I, K, L, and M, Fifth Infantry, for Fort Sheridan, Ill.

*October 15, 1899.*—Batteries B, C, D, and E, Second Artillery, for Fort McPherson, Ga. (Home battalion.)

*October 16, 1899.*—Companies E, F, G, and H, Fifteenth Infantry, for Madison Barracks, N. Y. (Home battalion.)

*January 5, 1900.*—Headquarters and Companies A, B, C, D, I, K, L, and M, Fifteenth Infantry; headquarters and Companies A, C, and D, for Plattsburg Barracks, N. Y.; Company B, for Fort Ethan Allen, Vt.; and Companies I, K, L, and M, for Fort Columbus, New York Harbor.

*January 19, 1900.*—Troops A, B, C, and D, Eighth Cavalry, for Fort Riley, Kans. (Home battalion.)

*July 16, 1900.*—Companies E and F, Eighth Infantry, for Fort Snelling, Minn.

*July 19, 1900.*—Headquarters and Companies I, K, L, and M, Second Infantry, for Fort Thomas, Ky.; headquarters and Companies A, B, C, D, G, and H, Eighth Infantry, for Fort Snelling, Minn. (Home battalion.)

*July 20, 1900.*—Headquarters and Companies A, C, F, and G, Fifth Infantry, for Fort Sheridan, Ill. (Home battalion.)

*August 1, 1900.*—Companies B, D, E, and H, Fifth Infantry, for Fort Sheridan, Ill. (Home battalion.)

*August 4, 1900.*—Companies K, L, and M, First Infantry, for Fort Leavenworth, Kans. (Home battalion.)

*August 9, 1900.*—Headquarters and Companies E, F, G, and H, First Infantry, for Fort Leavenworth, Kans.; Light Battery F, Second Artillery, for Washington Barracks, D. C.

*September 2, 1900.* Company I, First Infantry, for Fort Leavenworth, Kans. (Home battalion.)

The above movements have withdrawn from the troops in the island of Cuba four troops of cavalry, three batteries of artillery, and the equivalent of five regiments of infantry.

### PORTO RICO.

*August 4, 1900.*—Headquarters and Troops K and L, Fifth Cavalry, left Porto Rico to take post at Fort Myer, Va.

*August 7, 1900.*—Troops I and M, Fifth Cavalry, for Fort Myer, Va.

*August 8, 1900.*—Companies A, B, C, and D, Eleventh Infantry, for Fort Columbus, New York Harbor. (Home battalion.)

On the 30th of April, 1900, Brig. Gen. George W. Davis, U. S. Volunteers, commanding the Department of Porto Rico, upon the recommendation of the governor elect, established six civil executive departments, to facilitate the transfer of the civil duties of the military government of the island.

Hon. Charles H. Allen, having been inaugurated as governor of Porto Rico on May 1, 1900, General Davis, on the same day, formally announced the transfer, to the duly appointed civil officers of the Government of Porto Rico, of the military control over civil affairs which had heretofore been exercised by the department commander.

## CHINA.

The perilous situation of the members of the American legation at Pekin and their complete isolation in the midst of an unruly and murderous populace last spring demanded prompt action for their relief. The Commanding General, Division of the Philippines, was therefore instructed by cable, June 16, to send at once a regiment of infantry to Taku, and, six days later, Maj. Gen. Adna R. Chaffee, U. S. Volunteers, was selected to command the United States troops to compose the China relief expedition.

The following is a summary of events in China subsequent to the firing by the Taku forts on foreign war vessels which resulted in the surrender of the forts June 17, and to the capture of the east arsenal at Tientsin by the allied forces on the 27th of the same month:

*July 3.*—Headquarters and eight troops of the Sixth Cavalry sailed from San Francisco on the *Grant* for China.

*July 6.*—Ninth Infantry landed at Taku.

*July 11.*—Two battalions Ninth Infantry reached Tientsin.

*July 13.*—Severe engagement at Tientsin between the allied forces and the Chinese. The Ninth Infantry suffered heavily, losing Colonel Liscum and 17 men killed and 5 officers and 72 men wounded.

*July 14.*—Tientsin captured by the allies; Third Battalion, Ninth Infantry, reached that place.

*July 15.*—Light Battery F, Fifth Artillery, and two battalions Fourteenth Infantry sailed from Manila for China.

*July 17.*—Headquarters and four companies Fifteenth Infantry sailed from San Francisco on the *Sumner* for China.

*July 26.*—Two battalions Fourteenth Infantry, on the *Indiana*, arrived at Taku.

*July 27.*—Light battery F, Fifth Artillery, on the *Flintshire*, arrived at Taku.

*July 28.*—General Chaffee, with headquarters and eight troops Sixth Cavalry, arrived at Taku.

*July 29.*—Four batteries Third Artillery sailed from San Francisco on the *Hancock* for China.

*August 5.*—Pietsang captured by the allied forces. No casualties to the United States troops.

*August 6.*—Light Battery F, Fifth Artillery, Ninth and Fourteenth Infantry, participated in battle of Yangtsung, sustaining a loss of 7 men killed and 1 officer and 62 men wounded.

*August 9.*—Japanese, British, Russian, and American troops advanced to Ho-si-wu, the Chinese flying after firing first shots.

*August 14.*—Pekin entered at 5 p. m. by the allied forces.

*August 14–15.*—Capture of Pekin by the allied forces, in which Light Battery F, Fifth Artillery, and the Ninth and Fourteenth Infantry sustained a loss of Capt. Henry J. Reilly and 5 men killed and 30 men wounded.

*August 16.*—Brig. Gen. Thomas H. Barry, U. S. Volunteers, and four companies Fifteenth Infantry arrived at Taku.

*August 19.*—Action near Tientsin, in which Sixth Cavalry had 6 men wounded.

*August 21.*—Four batteries Third Artillery, on the *Hancock*, arrived at Taku.

*August 28.*—The allied forces formally entered the palace grounds at Pekin.

The relief of the American legation, following the capture of the Chinese capital, transferred to the domain of diplomacy the settlement of the proper redress for the outrages to the representatives of the American Republic and to its citizens residing in that country. It was therefore determined to withdraw the United States troops, leaving only a legation guard, to consist of four troops of cavalry, one light battery, and one regiment of infantry, under command of Major General Chaffee, U. S. V., he being instructed to send the remainder of his force to Manila.

The casualties in the several actions in China between July 1 and October 1, 1900, were as follows:

| Organization. | Killed. | | Wounded. | | Total. | | Aggregate. |
|---|---|---|---|---|---|---|---|
| | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | |
| Hospital Corps | | | | 1 | | 1 | 1 |
| Sixth United States Cavalry | | | | 6 | | 6 | 6 |
| Fifth United States Artillery | 1 | | | 3 | 1 | 3 | 4 |
| Ninth United States Infantry | 1 | 19 | 7 | 81 | 8 | 100 | 108 |
| Fourteenth United States Infantry | | 11 | | 79 | | 90 | 90 |
| Total | 2 | 30 | 7 | 170 | 9 | 200 | 209 |

## THE MILITARY ACADEMY.

The Military Academy at West Point is in a most satisfactory condition. The provision which Congress made at its last session for an increase of 100 cadets filled a need long felt by the service, and will result in great benefit both to the Army and to the country at large.

The wear and tear of time has told on many of the buildings, and much money has been spent from time to time in repair of buildings that would have been better spent in the erection of new ones. This question has been fully considered by a board of officers convened for this special purpose, the report of which is so thorough and satisfactory that it is submitted in its entirety and your favorable consideration requested. The Superintendent of the Academy will be instructed to submit special estimates based on the report of this board. In this connection the report of the Board of Visitors to the Academy for this year, in which the needs and requirements of the institution have received thorough investigation, is of unusual interest and is commended to your careful attention.

United States Military Academy,
*West Point, N. Y., September 25, 1900.*

The board of officers appointed to consider and report upon the capacity of the present plant of the United States Military Academy, has the honor to report as follows:

An adequate presentation of this subject requires that it should be considered under two general heads: (1) The character and condition of the existing plant; (2) the nature of the present and future conditions it is called upon to sustain.

A summary of the structures constituting the Military Academy and post of West Point is given in the table below.

| | |
|---|---|
| Barracks (1 cadet, 1 band, 1 engineer, 1 army service, 1 cavalry, 1 artillery) | 6 |
| Academic building | 1 |
| Headquarters building | 1 |
| Mess hall | 1 |
| Gymnasium | 1 |
| Chapel | 1 |
| Library | 1 |
| Hospitals (1 cadet, 1 enlisted men) | 2 |
| Store (cadet quartermaster) | 1 |
| Riding hall | 1 |
| Memorial hall | 1 |
| Ordnance laboratory | 4 |
| Observatory | 1 |
| Hotel | 1 |
| Quartermaster's carpenter and blacksmith shops | 1 |
| Quartermaster's storehouse | 1 |
| Equipment shed and commissary storehouse | 1 |
| Post exchange | 1 |
| Gas houses | 2 |
| Gas tanks | 3 |
| Government stables | 2 |
| Livery stable | 1 |
| Bakery | 1 |
| Filter houses | 2 |
| Water house | 1 |
| Officers' quarters (sets for married officers, 41; sets for bachelor officers, 16) | 57 |
| Detached enlisted men (single sets, 6; double sets, 25; quadruple sets, 5) | 36 |
| Employees and master of sword (single sets, 3; double sets, 2; triple sets, 1, including master of sword, Kinsley House, 1) | 7 |
| Band leader | 1 |
| Guardhouses (south gate, general, cadet) | 3 |
| Bath houses (cadet, soldier) | 2 |
| Boiler house (for heating buildings near cadet area) | 1 |
| Cold-storage (one at present used for storehouse and temporary stable) | 3 |
| Waiters' quarters (at Mess Hall) | 1 |
| Laundries (cadet and hotel) | 2 |
| Magazine | 1 |
| Children's schoolhouses | 2 |
| Store | 1 |
| Boathouses and pontoon house | 4 |
| Firing house, magazine, two shot houses (at water battery) | 4 |
| Wooden structures for miscellaneous purposes | 26 |

Exclusive of outbuildings, reservoirs, and batteries, the Military Academy and post of West Point consists of 163 structures.

The aggregate of the appropriations for the buildings which have housed the Academy during the first century of its existence is about $2,700,000. These structures have been erected by the authority of Congress at irregular intervals from the founding of the Academy in 1802 to the present day, to meet the immediate requirements of the institution as it gradually grew with the development of the country. At the beginning of the second century of its existence we find that only two of the buildings erected for the use of the cadets are of sufficient size to accommodate the corps as enlarged by the recent act of Congress. A brief analysis of the principal buildings will show the limitations of each and the enlargements which are absolutely essential.

### THE CADET BARRACKS.

The cadet barracks, which replaced the old brick barracks of 1815 and 1817, was erected in 1851, to meet the growth of the Corps of Cadets; an addition was made to it in 1882. It is a four-storied granite building of imposing appearance, costing about $186,000. As it now stands the barracks has 180 rooms, each designed for two cadets. In addition to the above it has quarters for 4 bachelor officers. As the Corps of Cadets now numbers 429, it necessitates the placing of three cadets in each of 69 rooms. Even were quarters constructed elsewhere for the above 4 officers, the barracks would have but 192 available rooms, of accommodation for 384 cadets. The number of cadets present being 429, and the maximum number authorized by law being 481, it will be seen that an increase in barrack accommodations is absolutely essential.

The system of heating is direct radiation from a central plant by steam coils of various patterns of obsolete type. This style of heating without artificial ventilation is most pernicious and requires thorough renovation.

The basement is now a damp, unwholesome space, divided into waste rooms used for rubbish and storage. The bathrooms and sinks are combined in a separate building erected of late years in the area. This plan is inconvenient and objectionable. Those who may be sick or partially invalided are compelled, in inclement weather, to go through snow and rain to reach them. Modern sanitary plumbing renders it perfectly safe to place the sinks and baths in the basement of barracks, a change which would render available for other purposes the space in the area of barracks now occupied by these buildings.

### THE ACADEMY BUILDING.

This is a granite building constructed in 1892 at a cost of $480,000, which houses all the departments of academic instruction. It will accommodate 500 students, and therefore requires no enlargement under existing circumstances.

### THE CADET HOSPITAL.

The hospital is a granite building, constructed in 1874–1880, but never completed; only two of its four wards have been constructed. As at present constituted the regular wards will accommodate 18 patients, and an inadequately equipped convalescent ward can be made to hold 12 more, making a total of 30. The hospital accommodations are manifestly inadequate, and the building should be completed so as to provide for 50 patients. In addition to the hospital, there should be a separate and entirely new building for infectious diseases; there is at present no provision for such cases.

### THE RIDING HALL.

The present riding hall, erected in 1855, is a granite structure with wooden trussed roof, 218 by 78 feet.

For instruction in riding the classes are necessarily divided into sections. The third class is divided into four and the first and second classes each into two sections. To enable the instruction given in the hall to be thorough and to progress with effective rapidity, it is found that the size of a section should not exceed 24 cadets; 32, however, can be accommodated by making the exercises slower, and with a corresponding loss in the extent of instruction. With the increased strength of the Corps of Cadets, as recently authorized, it is probable that after the present year the maximum strength of a section of the first and second classes will vary between 50 and 60 cadets. The capacity of the riding hall should therefore be doubled.

The hall is now badly heated and lighted. The lack of proper heating causes the tan bark to freeze and cake in winter, and the defective lighting interferes with the instruction.

### THE MESS HALL.

The mess hall, a granite building erected in 1850, will seat 340 cadets, but has a cooking capacity for 300 only; its plan, however, admits of indefinite extension. There are accommodations for a force of cooks and attendants for 340 cadets. Seating accommodations for 89, and cooking arrangements for 129 cadets are lacking under existing conditions, and also provision for the necessary increase in cooks and attendants. The mess hall and kitchens should be so enlarged to accommodate at least the maximum number of cadets now authorized by law (481).

### THE CHAPEL.

The chapel is a granite building erected in 1836 with a seating capacity of 428, just sufficient to accommode the present number of cadets. As there are also present for duty 73 officers and instructors of the institution, together with members of families and friends, besides a considerable number of civilian employees, the chapel accommodations are much too small. If there be added to this the fluctuating and sometimes very large body of general visitors, it will be seen that provision should be made for a congregation of not less than 800.

### THE LIBRARY.

The library, a granite structure, is now being remodeled; when completed it will be adequate for the present and future needs of the institution.

### THE GYMNASIUM.

This building, a granite structure, was erected in 1891, and has a floor area in the gymnasium proper of 6,300 feet. It will not properly accommodate for purposes of instruction sections of over 40 men at one time. The fourth class is necessarily divided into three sections, each of which at present contains 60 men. The floor area should therefore be increased one-half. In addition to this provision is needed for increased machinery, storage, dressing rooms, enlargement of swimming tank, and the various other accessories of the gymnasium.

### THE OBSERVATORY.

The observatory is a granite structure erected in 1882. Its accommodations are ample for the present needs of the institution.

### THE CADET LAUNDRY.

The present plant can properly do the work for 250 cadets during the summer, running ten hours per day, and for 400 cadets in the winter, running eight hours per day. Provision should be made for at least 375 cadets during the summer and 481 during the winter. It is desirable also that during the heated spell' the hours of work should not be excessive and that the plant should do all the work easily under normal conditions.

### THE CADET STORE.

The present building has a capacity for properly supplying 300 cadets. It should be able to supply the authorized maximum of 481.

### THE CADET GUARDHOUSE.

This is an antiquated brick building containing 11 small rooms, which are used for the following purposes: Offices for the commandant of cadets and his 8 assistants, 3 clerks, and cadet officer of the day; a guardroom, engine room, and tool room. Provision should be made for 9 officers, 3 clerks, room for the guard, room for orderly musicians, and for 6 armories, and 1 storeroom.

### THE ADMINISTRATION BUILDING.

This is a granite building erected in 1871. It contains the offices of the Superintendent, the adjutant, and the quartermaster, and is the depository of most of the records of the post. Many of the rooms in this building are overcrowded and an increase in floor space is very desirable.

### THE SUMMER ENCAMPMENT.

The present summer encampment has a capacity of 140 tents, accommodating 280 cadets. To accommodate properly the maximum number of cadets likely to be in camp, under the present authorized maximum strength (481) of the corps of cadets, 46 additional tents will be required. This will provide a tent for every 2 cadets, the maximum number which can be put in a tent without crowding and discomfort.

The additional ground required for the encampment can be obtained by razing the parapet and filling in the ditch of Fort Clinton, and by removing and transplanting a number of trees north of the present camp.

### THE OFFICERS' QUARTERS.

The buildings occupied by the officers of the Military Academy as quarters are of every variety of type, construction, and material, and of all ages—from the earliest days of the Academy to the present date. The most substantial are those occupied by the Superintendent and heads of departments; some of these are of stone and the rest of brick. They are all old structures, some of them dating from 1816. The remaining houses are of brick or wood and have been variously altered and added to. Upon the older buildings very much money has been expended in repairs, and as the appropriations for repairs cover the entire plant of the institution it is impossible to make thorough renovations. As a consequence repairing by driblets goes on from year to year at a very large aggregate cost and with only temporary results.

None of the older sets of quarters are up to the standard of modern domestic architecture either in plan or conveniences, and as a rule are very far below the standard adopted in the quarters recently erected by the Government at army posts.

For bachelor officers convenience and economy are best subserved by arrangement in suites in a single building. There are now 23 bachelor officers assigned to the Academy; for their accommodation there is but one such set of bachelor quarters, designed for 8 officers. The other bachelor officers occupy rooms in the cadet barracks and in the quarters of married officers. With less active military operations than at present the proportion of bachelor officers will tend to increase and a building providing for about 20 suites should be erected on a convenient site adjacent to the mess building.

There are at present available 41 sets of married officers' quarters, many of which are small, inadequate, and without modern conveniences, and others of the grade of cheap tenements and entirely unfit for occupancy. As there are 50 married officers on duty here, there is a balance of 9 unprovided for. Temporary arrangements entailing great inconvenience and risk to health have been effected to meet the present embarrassments. Nine sets of new quarters are required to properly provide for immediate needs, aside from all questions of removal and replacement of old sets. The quartermaster reports that at least 7 of the old sets should be immediately removed and replaced by new ones, and in this the board concurs.

### THE BARRACKS FOR CAVALRY DETACHMENT.

The present brick building will accommodate 95 men, which is sufficient for all present needs, but its location is such that it will interfere with any enlargement of the riding hall, and should be moved to another site.

### THE STABLES FOR CAVALRY HORSES.

The present brick stables provide stalls for 116 horses. The number of horses required is determined by the size of the first and second classes. All of the first class and half of the second class are required to attend squadron drill together. This will demand at least 160 horses in the near future. Stabling, therefore, for at least 44 additional horses must be erected. These stables also interfere with the enlargement of the riding hall, and should be moved to another site.

### THE ENGINEER BARRACKS.

This brick building was completed in 1858; it has a capacity of 50 men—the strength of the company when it was erected. The authorized strength of an engineer company is now 150. The necessity for an enlargement is apparent.

### THE BARRACKS FOR ARTILLERY DETACHMENT.

In 1900 Congress authorized the organization of an artillery detachment of 40 men. A brick building formerly used as a barracks for the quartermaster's detachment, and subsequently for other purposes, is available for temporary use; it requires renovation.

Stables suitable for the horses of this detachment can be provided temporarily by utilizing a stone building now used as a mule stable, together with the present livery stable; both require renovation. As these are temporary and inconvenient expedients, both as regards location and character of building, new barracks and stables on a suitable site should be provided.

### THE BAND BARRACKS.

The band barracks is a brick structure which has accommodations for 25 men. The legal strength of this organization being now 40 men, increased barrack accommodation is necessary. Suitable barrack accommodation is also needed for the squad of drummers and orderlies, whose authorized strength is 24 men.

### THE ARMY-SERVICE BARRACKS.

The army-service detachment occupies a brick building which has barrack accommodation for 80 men. The authorized strength of this detachment is now 125 men.

### THE COMMISSARY BUILDING.

The old equipment shed, now in part used as a commissary building, is remote, inconvenient, and unsuited to the purpose. For administration purposes it would be desirable to house the commissary, meat contractor, and post exchange in a single building constructed for the purpose.

### THE QUARTERMASTER'S SHOPS.

The care and repair of the existing plant and the erection of many minor constructions fall upon the quartermaster of the Academy. This is already a large and responsible work, demanding experience and ability in the officer having it in charge. It is not only economical but necessary to the Government that this class of work be done in its own shops, and the necessity for a competent plant is imperative. The present enlargement of the Academy increases this work, and a corresponding increase in the plant is demanded. This would include an extension to the carpenter, saddler, blacksmith, plumber, and tinsmith shops, as well as an extension to the lime sheds and storehouse, whose capacity is already inadequate. It should be borne in mind that this post is a small town, the policing and current repairs of which are done by the members of an army-service detachment, which is comprised of laborers and mechanics of all trades.

### THE WEST POINT HOTEL.

The hotel was erected in 1829 and has been added to from time to time. It is composed of a main building of stone, stuccoed, a brick wing, also stuccoed, and various wooden additions. The present structure is deficient in accommodations, obsolete in appointments, and defective in plan. In order that the hotel may fulfill the object for which it was designed, it requires a material increase in size and complete remodeling.

### THE STABLE.

The old stable is in very bad repair and unfit for its uses, besides occupying a position which is unsightly and inconvenient. The group of buildings of which it is a part, together with the old gas works, should be removed to a more suitable site.

### THE WATER SUPPLY.

The recently constructed Lusk reservoir, designed to relieve the needs of conditions then existent, is inadequate to meet any additional demand, and the rapid increase of consumption recently brought about gives the question a very serious aspect. Any considerable diminution in rainfall, such as characterizes a moderate drought, would produce a water famine.

It is a matter of vital importance that the only available source of supply in this vicinity—i. e., Long Pond—should be immediately purchased before further increase in the price of land and before vested rights in it as a source of supply shall have been acquired by others. In the latter case its acquirement might be impossible, and the future needs of the institution as regards water supply would present insuperable difficulties.

### STEAM HEATING AND LIGHT.

The existing arrangements for heating public buildings are inadequate and unsystematic. This results naturally from the spasmodic nature of their growth and extension, one building after another having been attached to a plant originally small and located with reference to a special building.

Steam heating was first applied to cadet barracks and thence extended to include adjacent buildings. As a consequence the original plant, grown unwieldy, is objectionably located in the area of the barracks. The pipes and connections are for a large part confused and improperly laid, and the system does not include several of the public buildings, which therefore require separate plants. It would result in a great economy to the Government to have all buildings heated from a central plant, as has been done in the large posts recently built. The present method of lighting is equally objectionable and wasteful. It involves the operation and maintenance of two systems—gas and electricity—neither of which is effectively and economically organized. The gas plant is obtrusively located in a very conspicuous position, offensive both to sight and smell. The connections of both systems are confused and conflicting and the result of the same spasmodic growth as in the case of the steam-heating plant.

A central plant which shall include both heating and light, inconspicuously located, is the only proper solution of a condition which is wasteful and ineffective.

### THE SEWERAGE.

The sewer system is divided into three general drainage areas. The main sewer of the first starts from the assembly of buildings about the soldiers' hospital, follows the main road to the neighborhood of the engineer barracks, passes down the slope through the buildings associated with it, and on to the made ground of the West Shore Railroad, and thence to the river near the tunnel. The main sewer of the second area takes in the row of professors' quarters facing the river and as far as the second set south of the Superintendent's quarters, passing in rear of the first and in front of the parade group down the road to the north dock and thence to the river at a point some 200 yards to the east thereof. The main sewer of the third begins at the termination of the second in rear of officers' quarters, passes in front of the barracks and down the Highland Falls road as far as the old south gate. Its outlet passes by the riding hall and empties onto the tidal flats below the cavalry stables. This last outlet is in every way highly objectionable and dangerous to health. These mud flats are becoming each year more exposed at low tide, and already the effluvia from exposed sewage are at times very perceptible and offensive.

### CONCLUSION.

The foregoing statement makes it apparent that the existing plant of the Military Academy is wholly inadequate to its present needs. Past experience makes it highly expedient that any modifications of, or additions to, the existing plant should be undertaken upon broad and carefully considered lines, and with a view to a homogeneous development under the best conditions. The old method of temporary makeshifts and inadequate construction is not only destructive to the dignity and beauty of the institution as an architectural whole, but wasteful and extravagant in the long run. It is therefore suggested that this matter be laid before the proper authorities with the recommendation that a comprehensive plan of enlargement, to be determined by competent architects in cooperation with the authorities of the Military Academy, be carried out, the plan to be one that will not only provide for present needs, but also admit of future extension.

A. L. Mills,
*Colonel, U. S. Army, Superintendent.*

P. S. Michie,
*Professor of Natural and*
*Experimental Philosophy.*

S. E. Tillman,
*Professor of Chemistry, etc.*

Geo. B. Davis,
*Lieutenant-Colonel,*
*Deputy Judge-Advocate-Gen'l, U. S. A.,*
*Professor of Law.*

O. L. Hein,
*Lieut. Col., Commandant of Cadets.*

F. E. Hobbs,
*Captain of Ordnance,*
*Instructor of Ordnance and Gunnery.*

J. B. Bellinger,
*Major and Quartermaster, U. S. V.,*
*Quartermaster.*

Chs. W. Larned,
*Professor of Drawing.*

E. E. Wood,
*Professor of Modern Languages.*

G. J. Fiebeger,
*Professor of Civil and*
*Military Engineering.*

Wright P. Edgerton,
*Professor of Mathematics.*

Joseph E. Kuhn,
*Captain of Engineers,*
*Instructor Practical Military Engineering.*

W. C. Rivers,
*First Lieutenant, First Cavalry,*
*Adjutant, U. S. Military Academy,*
*Recorder.*

Special attention is also invited to the report of the Superintendent of the Military Academy relative to the hotel at West Point. The present building is old, entirely inadequate and unfit in its appointments for its purpose.

If authority be given to lease the present site on reasonable terms it is not doubted that private enterprise would provide a hotel supplied with all modern conveniences, and affording ample accommodations for all the purposes of its establishment at the Military Academy.

### THE MILITARY INFORMATION DIVISION.

All the military technical publications, dispatches, reports, etc., received from abroad have been noted, carded, and properly classified.

Many communications addressed to the War Department or its Bureaus, and written in a foreign language, have been translated.

The French-English Military Technical Dictionary, by Lieut. Cornélis De W. Willcox, United States Artillery, has been completed in three parts and issued.

Under instructions from the War Department, Capt. Stephen L'H. Slocum, Eighth Cavalry, military attaché at Lisbon, Portugal, was detailed to accompany the British forces in South Africa, and Capt. Carl Reichmann, Seventeenth Infantry, to accompany the Boer forces during the military operations in the Transvaal. Both of these officers have made a number of reports, which are interesting and valuable. Captain Slocum returned to his station and has since been transferred to St. Petersburg, while Captain Reichmann is under orders to return to the United States.

Since the last annual report the Military Information Division has prepared and issued the following-described publications:

No. 24. "A French-English Military Technical Dictionary," part 2, 1900. Part 3, 1900.
No. 25. "Reports of Explorations in the Territory of Alaska," 1899.
No. 26. "The Autumn Maneuvers of 1898," 1899.
No. 27. "The Autumn Maneuvers of 1899," 1900.
No. 28. "Report on the Island of Guam," by Brig. Gen. Joseph Wheeler, U. S. A., 1900.
No. 29. "The Organized Militia of the United States in 1898," 1900.
No. 30. "Notes on China," 1900.

In the map section the following work has been accomplished:

Map of the seat of war in Africa, one sheet, three editions.
Map of the Visayan Group, Philippine Islands, one sheet.
Second edition of Carta General del Archipelago Filipino, republished from Spanish chart, two sheets.
Copious editions and corrections to second edition of military map of the Isle of Luzon, two sheets.
Map of Northeastern China, one sheet; two editions.
Map of the Pei-Ho, China, one sheet.

During the year the map files of the division have been increased by the addition of 840 maps, including both foreign and domestic.

Many maps and charts have been mounted by the draftsmen for the use of officers of the Army, and numerous minor sketches, illustrations, drawings, etc., required by them and in the publications issued by the division, have been prepared in this section.

Much work has also been done in the preparation of maps, etc., to accompany annual reports.

The entire work of this division has been very useful and highly satisfactory. All connected with this important work are deserving of special credit.

### MILITARY ATTACHÉS.

The following is a list of the military attachés at the several embassies and legations abroad:

#### EMBASSIES.

London: Maj. Edward B. Cassatt, Twenty-seventh Infantry, United States Volunteers (first lieutenant, Fourth Cavalry).
Paris: First Lieut. T. Bentley Mott, Seventh Artillery.
Berlin: Maj. John B. Kerr, Tenth Cavalry.
St. Petersburg: Capt. Stephen L'H. Slocum, Eighth Cavalry.
City of Mexico: First Lieut. Powell Clayton, jr., Fifth Cavalry.

#### LEGATIONS.

Berne: Capt. George R. Cecil, Thirteenth Infantry.
The Hague: Lieut. Col. James N. Wheelan, Seventh Cavalry.
Copenhagen and Stockholm: Lieut. Col. W. R. Livermore, Corps of Engineers.
Brussels: Lieut. Col. James N. Wheelan, Seventh Cavalry, temporary.

Attention is again invited to the disadvantages under which our military attachés labor. In South Africa the military attachés of other nations had liberal allowances, but in the case of our attachés they had none, other than their pay and mileage, while their expenses were heavy.

It is very desirable to have military attachés at all European capitals, but the expenses incident to duty of this peculiar and delicate nature, over and above the cost of domestic establishment, are so very great that unless an officer has a private income outside of his pay he can not afford to take such a position. Under present conditions, therefore, the choice of military attachés must be restricted to the few officers who have incomes in addition to their pay, and are willing to spend their private means in the performance of this public duty.

### DETAIL OF OFFICERS.

The details of officers for necessary service calling them away from their regular duties have made a heavy but unavoidable draft on the effective strength of the several corps and line of the Army, and this drain has been made still heavier during the past two years by the detachment of officers to command volunteers.

The number of officers of the Regular Army absent on recruiting service, etc., holding commissions in the United States volunteers and performing necessary civil functions, etc., in the Philippines and Cuba, is as follows:

| | Detached duty. | Holding commissions in volunteers. | Total. |
|---|---|---|---|
| Staff corps | 6 | 59 | 65 |
| Cavalry | 71 | 67 | 138 |
| Artillery | 52 | 29 | 81 |
| Infantry | 107 | 78 | 185 |
| Total | 236 | 233 | 469 |

## APPOINTMENTS IN THE ADJUTANT-GENERAL'S AND INSPECTOR-GENERAL'S DEPARTMENTS.

The sixth section of the act of March 2, 1899, for increasing the efficiency of the Army, is as follows:

SEC. 6. That the Adjutant-General's and Inspector-General's departments shall consist of the number of officers now in those departments, respectively: *Provided*, That vacancies in the grade of major occurring in either department shall hereafter be filled from captains in the line of the Army: *And provided further*, That all such captains who have evinced marked aptitude in the command of troops shall be reported by their regimental commanders to the War Department, and shall be entitled to compete for any such vacancy under such system of examination as the President shall prescribe.

The following are the regulations established by the President under the law above cited:

*I. Applicants.*—Captains of the line "who have evinced marked aptitude in the command of troops" will be reported to the Adjutant-General of the Army by their respective regimental commanders.

In order that the manifest intention of the law may be carried out, captains who may have been detached from their regiments, and who may have evinced marked aptitude in the command of troops when not under the observation of their regimental commanders, will, in like manner, be reported to the Adjutant-General by their respective commanding officers. All captains so reported, and who desire to enter the competitive examination, will make application to the Adjutant-General of the Army, through military channels, for orders to appear for examination, and will forward at the same time such letters or recommendations from their military superiors as they may desire to submit.

*II. Reports of commanders.*—The first report of regimental commanders or commanding officers will be forwarded at once, and thereafter they will be forwarded on the 31st day of December of each year. The reports should show in detail the facts upon which they are based, what opportunities the officers reported have had, and what commands they have exercised; also the management of their companies, by the captains reported, in respect to discipline, sanitation, and the care of men.

*III. Examinations.*—The examination will be dual: First, by divisional or departmental boards, and, secondly, by a central board at Washington. The primary board will conduct the physical examination of the applicants and a written examination on questions prepared by the central board. The central board will examine the papers submitted, together with the records of the applicants, and mark them, giving each subject its relative weight, as follows:

| Subject. | Relative weights. |
|---|---|
| Military and personal record, and aptitude for staff service | 12 |
| Drill regulations, all arms | 3 |
| Minor tactics | 3 |
| Topography | 1 |
| Law (constitutional, international, and military, and law of evidence) | 2 |
| Hygiene of posts and camps | 2 |
| Functions of the Adjutant-General's and Inspector-General's departments, correspondence, staff administration | 3 |
| Money and property accountability | 1 |
| Hippology | 1 |
| Logistics | 2 |

*IV. Boards.*—A central board, composed of an officer each of the Adjutant-General's Department and the Inspector-General's Department and an officer of the line not below the rank of major, will be convened at Washington. It will prepare sets of questions on the subjects specified and note the time to be allowed for answering each set. The questions so prepared will be sent to the divisional and departmental boards, and upon their return will be carefully examined and marked by the central board. The central board will then mark the candidates on their records, basing its action on the official records of the War Department, reports of regimental and other commanders, letters and papers submitted by the applicants, and all available sources of information as to the military and personal character of the applicants and their aptitude for the duties of the position sought. On the completion of the marking the names of the applicants will be arranged in a list according to relative merit, and the officers will be recommended for appointment in the order in which their names appear on such list. Any officer whose name shall stand lower than thirty on such list will be ineligible for further competition.

Boards will be convened at such times as the Secretary of War may direct, by the commanding general Division of Cuba, and by the commanders of departments not included therein, or by as many of them as may be necessary, at the headquarters of such division or departments. Each board will consist of three officers, preferably field officers, selected from the line, adjutant-general's department, or inspector-general's department, and two medical officers. The duties of the latter will be confined to the physical examination of the applicants. The other members of the board will supervise the written examination on the questions prepared by the central board, and on the completion of the examination will send the papers, under seal, to the adjutant-general for transmission to the central board. The time occupied in the preparation of each paper will be noted.

The members of all examining boards will be sworn to faithfully and impartially perform their duties.

Under the requirements of the Army Regulations, every officer of the Army makes an individual report of service on the 30th of June of each year, giving, in addition to the enumeration of purely military duties performed, information on the following subjects, viz: Professional or scientific study or investigation; foreign languages; special knowledge of a particular line of work; business experience, and books written or published or essays and lectures prepared.

Efficiency reports are also made at the end of each fiscal year by commanders of departments, chiefs of staff bureaus, and commanding officers of posts, etc., for every officer under their immediate control and supervision. Extracts of inspection reports containing specially favorable or unfavorable mention of an officer are made and filed with his individual report, and, in like manner, extracts are made from all reports of actions, engagements, etc., in which an officer has been engaged.

It will be seen, therefore, that efficiency reports of officers afford the Secretary of War the fullest possible information respecting all officers and enables him to form a true estimate of the standing, ability, and special fitness of every officer of the Army for any military duty. The new system made necessary to fully carry out the intention of the law of March 2, 1899, results in too much delay in filling vacancies—two now existing in the Adjutant-General's Office and one in the Inspector-General's Office—without adding to the information that may be desired by the War Department in any one case. The repeal of section 6 of the act quoted above is therefore recommended.

Under existing conditions it will require on the average six months to fill a vacancy in either department.

### WAR COLLEGE.

The board of officers appointed by direction of the Secretary of War, for the consideration of proper regulations, with a view to the establishment of a war college for the Army has not yet formulated its conclusions on this important subject. The purpose of the Department in establishing this college is to further the higher instruction of the Army; to develop and organize, in accordance with a coherent and unified system, the existing means of professional education and training, and to serve as a coordinated and authoritative agency of this office through which all means of professional military information shall be, at all times at the disposal of the War Department.

## COLLEGE DETAILS.

The continued exigencies of the military service during the past year has made it inadvisable, if not absolutely impossible, to make any college details from the officers on the active list. Requests for such details have, however, been complied with in part by the assignment to that duty of officers on the retired list of the Army.

## RETIRED LIST FOR OFFICERS.

The recommendation of last year that officers of the Army be placed on the same footing as to retirement as is provided for officers of the Navy by the act of March 3, 1899, increasing the efficiency of the personnel of the Navy, is renewed. Under the provisions of section 9 of this act officers of the Navy involuntarily retired are given the rank and receive three-fourths of the pay of the next higher grade.

Officers of the Army and Navy, sharing, as they do, the dangers and hardships of their professions, are equally entitled to the same benefit of retirement on increased rank under like conditions, and the extended benefit to the Army should take effect from the passage of the law above quoted, and officers of the Army retired since the passage of that act. namely, March 3, 1899, should have the full benefit of its provisions, This is urged solely on the ground of absolute justice.

## PROMOTION FROM THE RANKS.

The act of June 18, 1878, provided for the promotion to the grade of commissioned officer of meritorious noncommissioned officers who should be found morally, intellectually, and physically qualified for promotion, and the act of July 30, 1892, extended to all unmarried soldiers under 30 years of age and possessing the requisite qualifications the privilege of competing at prescribed examinations for commissions in the Army. That this last law has operated well in attracting to the ranks a superior class of intelligent and educated young men is evidenced by the yearly increasing number of men who have obtained admission into the commissioned branch of the Army, as shown in the subjoined table:

| | 1893. | 1894. | 1895. | 1896. | 1897. | 1898. | 1899. | 1900. | Total. |
|---|---|---|---|---|---|---|---|---|---|
| Cavalry | ........ | 1 | ........ | 2 | ........ | 1 | 12 | 5 | 21 |
| Artillery | ........ | ........ | ........ | ........ | ........ | 15 | ........ | ........ | 15 |
| Infantry | 6 | 12 | 3 | 8 | 22 | 33 | 41 | 58 | 183 |
| Total | 6 | 13 | 3 | 10 | 22 | 49 | 53 | 63 | 219 |

But, experience has shown that two years is too brief a period in which enlisted men can fit themselves for the important duties of commissioned officers. It is only little less than travesty to say that a man can qualify as an officer, by serving as an enlisted man, in one-half the time required for a cadet to complete his course at West Point. It is recommended that the law be amended to read four years instead of two. This will put appointments from the ranks and the Military Academy on the same footing.

To illustrate, two young men of say 21 years of age enter the service, one going to the Military Academy and the other enlists, the man from the ranks gets his commission in two years and the cadet not until four years, so that the enlisted man becomes the senior by two years and will so remain throughout their entire service.

### POST EXCHANGES.

The operation of the post exchanges during the past year, despite the attacks of the opposition outside of the Army, which have been persistent and unremitting, has been especially gratifying. Every complaint of specific violations of the regulations, or of excesses and abuses, have been promptly and impartially investigated and in every instance found to have been unwarranted.

Reports from the Philippine Islands indicate that the post exchange has become an absolute necessity, our troops being scattered at something over 400 stations, at small towns and villages, where it is quite impossible to purchase anything beyond the ordinary necessities of life; that the sale of beer in these exchanges has prevented the soldiers from drinking the vile native concoctions known as "anisado" and "bino," or "vino," which in the early days of our occupation presented a very serious problem to the military authorities, is proven by abundant testimony.

Similar reports have been received from Cuba, where the conditions are very much like those in the Philippine Islands; several officers, including General Lee, having reported that drunkenness has almost entirely disappeared since the sale of beer has been permitted in their commands. The chief surgeon at Santiago de Cuba reports that after the troops were scattered, owing to the outbreak of yellow fever in 1899, canteens were discontinued at many posts in eastern Cuba, but that alcoholism and malarial and intestinal troubles increased to an alarming extent, the latter almost fourfold at some posts, and as the increase could not be traced to the food or water, the surgeons attributed it to rum, which is easily procured at very slight cost in that section; that canteens were then opened, and the subsidence of these troubles was as remarkable as their rise (in one post, in one month, intestinal troubles decreased 80 per cent). He therefore believes that to close the canteen in that country, without first closing all possible avenues for the procuring of rum within a radius of 10 miles, would be sanitary suicide, and "from practical observations is led to the conclusion that the closing of the post canteen in Cuba would be an unjustifiable as well as a dangerous experiment."

What has been said of Cuba is equally applicable to Porto Rico. The inspector-general of that department, in his annual report for 1900, remarks as follows:

> Here we find exceptional conditions, all tending in a marked degree to drag the soldier down to a lower social place than any of our Army has ever known before. With native rum at 2 or 3 cents per drink, and the cheap complacency of the degraded female attendants in the saloons which abound near every garrison, it is easy to discern the causes to which so many cases of drunkenness and other disorders are attributable. Because of the absence of suitable recreative resorts when off duty and the wide gulf which a foreign language has placed between them and the

better classes of the people, the men are forced to seek diversion among the lower elements. I understand that efforts will be renewed at the next session of Congress to prohibit the sale of beer in post canteens, and I therefore beg to record the conviction that, so far as garrisons in the islands are concerned, such legislation would be ill advised.

The commanding officer of the Department of Texas has brought to the attention of the Department a new feature of the exchange system, which he thinks successfully solves a problem which has been a source of more or less trouble in the Army namely—the washing of the clothing of enlisted men. It has been difficult to hold men to a strict accountability for their appearance at inspections. The plea that their washerwoman had failed to get their clothes done in time has to be accepted, when proven true, and the woman is always beyond discipline. Moreover, each pay day brings the annoyance of solicitation by washerwomen for pay claimed to be due them from the men, and as a matter of fact enlisted men at most of the posts of the Army have to pay from $2.50 to $4 a month to laundresses, and in the summer time especially, when they are required to wear khaki uniforms and white trousers, the expense for their washing is a burden on their small pay.

As an experiment the post exchange at Fort Ringgold, Tex., started a laundry, with the wife of an enlisted man as manager, and has discovered after a few months' operation that, calculating all expenses, it is able to do all the laundry work for the garrison at an expense of $1 per man for all months excepting June, July, August, and September, for which months it can be done for $1.25 per man, as well as to deliver the clean clothing to the men on Friday afternoons, so as to enable all to present a neat appearance at the Saturday inspection. It is entirely optional with the men as to whether or not they shall patronize the laundry, but obviously the small expense presents an inducement that few of them resist. The result of this experiment has been communicated to the Army, and its successful installation at the larger military posts may be anticipated.

During the year ending June 30, 1900, the aggregate receipts of the exchanges in operation in the Army, so far as reports have been received, amounted to $1,845,927.55, and there was received as money on deposit $69,934.82, making the total amount of money received $1,915,862.37. There was expended for merchandise purchased, rents, fixtures, and repairs, and expenses of operation $1,381,423.23, which, less deposits, gives a profit of $464,504.32. From this amount there was donated to the funds of the several regimental bands $10,363.84; to the maintenance of post gardens, $1,362.82; to post libraries, $1,476.57, to gymnasiums, $7,008.63; as prizes for the encouragement of athletic sports, $3,653.52; and after setting aside the sum of $159,199.47 as a reserve fund to meet anticipated expenses for at least one month there was passed to the credit of the companies and mess funds for the benefit of the soldiers, in the form of dividends, the sum of $293,301.28. The net value of these exchanges—that is to say, the balance of their combined assets over their liabilities—was on June 30, 1900, $326,068.01.

## THE RECRUITING SERVICE.

*Regular Army.*—In October, 1899, there were sixty regular recruiting stations of the general service in large cities. The number of such stations has varied but little during the year, some being closed as they became unproductive and others opened in different localities; the number now in operation is 62. In several instances one officer conducts two such stations. Again, many of the recruiting officers stationed in these cities visit and conduct temporary stations also, thus canvassing the sections surrounding their main stations. In this way over one hundred and sixty temporary stations have been in operation for a longer or shorter time during the year, the average number in operation at a time being about forty (not counting places canvassed by volunteer recruiting officers, under the direction of general recruiting officers, during October, 1899).

The only special regimental recruiting party that was out October 1, 1899, was recalled during that month. The large number of regiments serving abroad, in whole or in part, renders special regimental recruiting for the time impracticable.

The general recruiting detail was changed in December, 1899, to consist of one officer from each regiment, the officers being nominated by their regimental commanders, thus affording an opportunity for home service to a number of officers who had been in active field service during the period of hostilities.

Temporary details have been made as necessary of officers belonging to depot battalions stationed within the United States to recruit for their own battalions, as well as for the general service.

In October, 1899, the enlisted strength of the Regular Army was about 6,400 below the authorized maximum, and active measures have been continued throughout the year to supply this deficiency and meet current losses.

A special feature during the year has been the recruiting of depot battalions, designated in accordance with General Orders No., 153, August 21, 1899, from this office, with a view to preparing a trained body of men for foreign service as they might be needed.

Under existing conditions the home or depot battalion offers the best means of recruitment of depleted regiments, and at the same time offers by way of station about the only relief possible to give the officers a tour of duty at home, the plan being that the home battalion shall remain on recruiting service and instruction for one year. This plan, fully carried out, will give the officers one year at home and two years of active service.

Constant efforts have been made to obtain suitable men for the artillery, both light and heavy. Instructions have been given to recruiting officers to exercise great care to accept only such men for the artillery as meet the special requirements of that arm. During the year upward of sixty batteries have been brought at times to their maximum strength.

Special efforts have also been directed in filling regiments when designated for service in the Philippines or China, as well as to providing men for vacancies occurring in regiments already in the Orient, and in Cuba and Porto Rico.

All organizations sailing for the Orient have been filled with recruits prior to their departure from the United States, the number of recruits thus supplied between July 1 and September 20, 1900, to regiments about to sail as indicated being 1,452. Between September 20, 1899, and September 20, 1900, 3,951 recruits were forwarded to regiments already in the Philippines or China, while on the latter date there were 1,826 recruits at different rendezvous in the United States undergoing instruction and awaiting the sailing of transports. During the same yearly period 1,212 recruits were forwarded to Cuba, and 375 to Porto Rico for regiments serving therein. There were also 255 recruits at rendezvous in the United States on September 20, 1900, for regiments in Cuba and Porto Rico.

In addition to the recruits thus supplied transfers were made in April and May, 1900, of 485 men from depot battalions in the United States to active battalions in Cuba, the vacancies thus created in the depot battalions being speedily filled, with a view to another draft for foreign service.

The total number of enlistments and reenlistments in the Regular Army during the fiscal year ending June 30, 1900, exclusive of the Hospital Corps, was 19,549, classified as follows:

| | |
|---|---|
| For the general service | 18,929 |
| For the special recruiting service | 88 |
| For staff departments | 532 |
| Total | 19,549 |

Of the 19,549 accepted applicants, 16,548 were native born and 3,001 of foreign birth; 18,649 were white, 870 colored, and 30 Indians. The enlistments numbered 15,588 and the reenlistments 3,961. Excluding reenlistments, the percentage of native born among the original enlistments was 88¼. The report show that the recruiting officers making the 19,017 enlistments embraced in the first two items of foregoing list rejected 69,694 applicants—about 78 per cent of the number seeking enlistment—as lacking in either legal, mental, moral, or physical qualifications; 987 of these were rejected as aliens, and 2,038 for illiteracy.

The total number of enlistments and reenlistments for the Hospital Corps during the fiscal year was 1,762, of which number 1,463 were native born and 299 of foreign birth; 1,686 were white and 76 colored. The enlistments numbered 1,349 and the reenlistments 413.

Including the Hospital Corps, the aggregate of all enlistments and reenlistments for the Regular Army during the fiscal year ending June 30, 1900, was 21,311.

*United States Volunteers.*—The last one of the twenty-five regiments of United States Volunteers left the rendezvous where it was organized November 15, 1899, en route to Manila. Recruiting in the United States for the volunteer regiments practically ceased in the latter part of October of that year, a few enlistments only being made thereafter to fill vacancies caused by disability, etc., prior to the sailing of regiments for the Philippines.

The number of volunteers enlisted for the twenty-five regiments since September 20, 1899, is 8,432, of whom 169 were enlisted in the Philippines, these latter being generally a special class of men, such as musicians, cooks, etc.

*Porto Rico Regiment, U. S. Volunteers.*—In February, 1900, the President authorized the organization of a mounted battalion of Porto Rican troops, to form with the infantry battalion already organized a Porto Rico regiment of native troops. The number of enlistments made for this regiment since September 20, 1899, to fill the mounted battalion and complete the recruitment of the infantry battalion, is 542.

## GOVERNMENT HOSPITAL FOR THE INSANE.

The following were committed to the Government Hospital for the Insane under the order of the Secretary of War from September 1, 1899, to September 1, 1900:

| | |
|---|---|
| Officer of the United States Army | 1 |
| Officer of the United States Army (retired) | 1 |
| Officer of the United States Volunteers | 1 |
| Enlisted men of the United States Army | 110 |
| Enlisted men of the United States Army (retired) | 5 |
| Enlisted men of the United States Volunteers | 27 |
| Late soldiers of the United States Army | 4 |
| Civilian employees of the Army | 2 |
| Total | 151 |

## THE ADJUTANT-GENERAL'S OFFICE.

With the addition of two chiefs of divisions, authorized by the act of April 17, 1900, the legal organization of the regular force of this office remains unchanged, and the temporary force has been continued. The conditions which have made the employment of temporary clerks necessary still exist and the volume of business taxes the energies of the entire clerical force, laboring as it does, and has done during the past two years, under the serious disadvantage of overcrowded rooms. This disadvantage is emphasized by the statement that the Adjutant-General's Office—the important bureau of correspondence and orders—occupies rooms located on five different floors either in the north, west, or center wings. While the State, War, and Navy building is generally assumed, from its size, to be capable of comfortably accommodating the three Executive Departments located therein, in point of fact it utterly fails to do so, and, unless provision is made by Congress for the renting of additional outside buildings for the accommodation of some of the minor bureaus, the present unfavorable conditions must speedily become worse, if not positively dangerous, as the weight of the files and papers that are required in the several bureaus for the prompt and correct conduct of business will soon exceed the safety load that can be placed on the floors of this building; indeed, in some of the rooms allotted to this office that weight has already, and unavoidably, been exceeded.

In justice to those clerks of the temporary force who during the past two years have demonstrated their efficiency and capacity for high-class work, it is earnestly hoped that means may be devised that will permit their transfer to the regular roll on the happening of vacancies therein, either by granting them a special examination or by authorizing their names to be placed on the Civil Service Commission register of eligibles, on the recommendation of the head of the bureau in which they are employed, approved by the Secretary of War.

The recommendation is renewed that the law governing leave of absence be amended so as to make the annual leave cumulative, not to exceed ninety days, that valued clerks whose devotion to duty prevents their availing themselves of the annual leave in any calendar year may be able at a future time to obtain a lengthened leave for rest or recreation without loss of pay.

To the officers on duty in this office—Col. Thomas Ward, Lieut. Col. William H. Carter, Majors George Andrews, John A. Johnston, William A. Simpson, assistant adjutants-general, and Capt. Edwin A. Root, Tenth Infantry—acknowledgment of faithful and efficient service is made.

Respectfully submitted.

H. C. CORBIN,
*Adjutant-General.*

The SECRETARY OF WAR.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | 8 | 1 |
| | | | | | | | | | | | | 15 | 2 |
| | | | | | | | | | | | | 9 | 1 |
| | | | | | | | | | | | | 8 | 1 |
| | | | | | | | | | | | 107 | 163 | 19 |
| | | | | | | | | | | | 173 | 195 | 3 |
| 164 | 389 | | | | | | | | 3,807 | | a4,360 | 4,540 | 25 |
| | | | | | | | | | | | | 26 | |
| | | | | | | 1 | | 265 | | | 687 | 813 | 1 |
| | | | | | | | | 150 | | | 664 | 725 | |
| | | 79 | | | | | | 43 | | | 748 | 759 | 6 |
| | | | | | | | | | | | | 2 | |
| | | | | | | | | | | | | 30 | |
| | | | 1 | 1 | 1 | 3 | | | | 936 | 1,247 | 1,294 | 4 |
| | | | 1 | 1 | 1 | 3 | | | | 729 | 1,040 | 1,087 | 6 |
| | | | 1 | 1 | 1 | 3 | | | | 1,032 | 1,343 | 1,390 | 7 |
| | | | 1 | 1 | 1 | 3 | | | | 1,121 | 1,432 | 1,479 | 10 |
| | | | 1 | 1 | 1 | 3 | | | | 873 | 1,184 | 1,231 | 6 |
| | | | 1 | 1 | 1 | 3 | | | | 878 | 1,189 | 1,236 | 7 |
| | | | 1 | 1 | 1 | 3 | | | | 791 | 1,102 | 1,149 | 7 |
| | | | 1 | 1 | 1 | 3 | | | | 864 | 1,175 | 1,222 | 8 |
| | | | 1 | 1 | 1 | 3 | | | | 896 | 1,207 | 1,255 | 4 |
| | | | 1 | 1 | 1 | 3 | | | | 853 | 1,164 | 1,212 | 8 |
| | | | 10 | 10 | 10 | 30 | | | | 8,973 | 12,083 | 12,555 | 67 |
| | | | 1 | 1 | | | | | | 1,136 | 1,549 | 1,600 | 4 |
| | | | 1 | 1 | | | | | | 1,031 | 1,444 | 1,495 | 5 |
| | | | 1 | 1 | | | | | | 1,170 | 1,583 | 1,634 | 3 |
| | | | 1 | 1 | | | | | | 1,058 | 1,471 | 1,522 | 8 |
| | | | 1 | 1 | | | | | | 1,147 | 1,560 | 1,609 | 3 |
| | | | 1 | 1 | | | | | | 1,281 | 1,694 | 1,744 | 6 |
| | | | 1 | 1 | | | | | | 1,264 | 1,677 | 1,725 | |
| | | | 7 | 7 | | | | | | 8,087 | 10,978 | 11,329 | 29 |
| | | | 1 | 1 | 1 | 3 | | | | 1,195 | 1,493 | 1,539 | 3 |
| | | | 1 | 1 | 1 | 3 | | | | 1,091 | 1,389 | 1,434 | 6 |
| | | | 1 | 1 | 1 | 3 | | | | 1,107 | 1,405 | 1,451 | 2 |
| | | | 1 | 1 | 1 | 3 | | | | 1,137 | 1,435 | 1,480 | 6 |
| | | | 1 | 1 | 1 | 3 | | | | 1,152 | 1,450 | 1,496 | 3 |
| | | | 1 | 1 | 1 | 3 | | | | 1,107 | 1,405 | 1,451 | 5 |
| | | | 1 | 1 | 1 | 3 | | | | 992 | 1,290 | 1,336 | 6 |
| | | | 1 | 1 | 1 | 3 | | | | 1,135 | 1,433 | 1,480 | 1 |
| | | | 1 | 1 | 1 | 3 | | | | 1,175 | 1,473 | 1,519 | 1 |
| | | | 1 | 1 | 1 | 3 | | | | 851 | 1,149 | 1,195 | 2 |
| | | | 1 | 1 | 1 | 3 | | | | 933 | 1,231 | 1,276 | 2 |
| | | | 1 | 1 | 1 | 3 | | | | 1,105 | 1,403 | 1,449 | 1 |
| | | | 1 | 1 | 1 | 3 | | | | 1,101 | 1,399 | 1,445 | 2 |
| | | | 1 | 1 | 1 | 3 | | | | 1,158 | 1,456 | 1,503 | 3 |
| | | | 1 | 1 | 1 | 3 | | | | 1,085 | 1,383 | 1,429 | 2 |
| | | | 1 | 1 | 1 | 3 | | | | 1,096 | 1,394 | 1,440 | 4 |
| | | | 1 | 1 | 1 | 3 | | | | 1,129 | 1,427 | 1,473 | 3 |
| | | | 1 | 1 | 1 | 3 | | | | 1,212 | 1,510 | 1,557 | 2 |
| | | | 1 | 1 | 1 | 3 | | | | 1,130 | 1,428 | 1,475 | 3 |
| | | | 1 | 1 | 1 | 3 | | | | 1,144 | 1,442 | 1,489 | 4 |
| | | | 1 | 1 | 1 | 3 | | | | 1,094 | 1,392 | 1,439 | 1 |
| | | | 1 | 1 | 1 | 3 | | | | 1,106 | 1,404 | 1,449 | 3 |
| | | | 1 | 1 | 1 | 3 | | | | 1,252 | 1,550 | 1,597 | 5 |
| | | | 1 | 1 | 1 | 3 | | | | 1,192 | 1,490 | 1,537 | 5 |
| | | | 1 | 1 | 1 | 3 | | | | 1,299 | 1,597 | 1,645 | 3 |
| | | | 25 | 25 | 25 | 75 | | | | 27,978 | 35,428 | 36,584 | 78 |
| | | | | | | | | | | 191 | 279 | 279 | |
| | | | | | | | | | | | 42 | 42 | |
| | | | | | | | | | | 74 | 74 | 74 | |
| | | | | | | | | | | 2,600 | 2,600 | 2,600 | |
| 164 | 389 | 79 | 42 | 42 | 35 | 106 | 1 | 458 | 3,807 | 47,903 | a63,861 | a66,396 | 238 |

and that of the Volunteers, 35,000. The H

H. C. CORBIN,
*Adjutant-General.*

## NITED STATES ACCORDING T

| Hospital stewards. | Acting hospital stewards. | First-class sergeants, Signal Corps. | Sergeant-majors. | Quartermaster-sergeants. | Commissary-sergeants. | Squadron or battalion sergeant-majors. | Privates, second class. | Privates, Hospital Corps. | Privates. | Total. | Aggregate. | Officers holding commissions in the Regular Army. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 22 | 16 |
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 9 | 9 |
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 9 | 7 |
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 5 | 3 |
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 87 | 38 |
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 20 | 10 |
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 34 | 12 |
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 30 | .... |
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 47 | 7 |
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 263 | 102 |
| .... | .... | .... | 1 | 1 | 1 | | .... | .... | 714 | 1,025 | 1,075 | 5 |
| .... | .... | .... | .... | .... | .... | | .... | .... | 349 | 451 | 466 | 3 |
| .... | .... | .... | 1 | 1 | 1 | | .... | .... | 1,063 | 1,476 | 1,541 | 8 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 887 | 1,188 | 1,238 | 5 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 888 | 1,189 | 1,236 | 5 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 927 | 1,228 | 1,278 | 4 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 908 | 1,209 | 1,258 | 4 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 931 | 1,232 | 1,282 | 3 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 904 | 1,205 | 1,255 | 4 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 870 | 1,171 | 1,221 | 8 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 920 | 1,221 | 1,271 | 4 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 912 | 1,213 | 1,262 | 6 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 930 | 1,231 | 1,281 | 8 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 645 | 946 | 996 | 2 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 693 | 994 | 1,043 | 4 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 901 | 1,202 | 1,251 | 5 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 906 | 1,207 | 1,256 | 5 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 903 | 1,204 | 1,254 | 5 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 901 | 1,202 | 1,252 | 7 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 889 | 1,190 | 1,240 | 6 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 927 | 1,228 | 1,277 | 6 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 948 | 1,249 | 1,299 | 5 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 935 | 1,236 | 1,285 | 4 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 935 | 1,236 | 1,286 | 8 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 940 | 1,241 | 1,290 | 5 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 976 | 1,277 | 1,327 | 6 |
| .... | 3 | .... | 1 | 1 | 1 | | .... | .... | 924 | 1,225 | 1,275 | 4 |
| .... | 2 | .... | .... | .... | .... | | .... | .... | 691 | 879 | 910 | 5 |
| .... | 74 | .... | 24 | 24 | 24 | | .... | .... | 22,191 | 29,603 | 30,823 | 123 |
| .... | 74 | .... | 25 | 25 | 25 | | .... | .... | 23,254 | 31,079 | 32,627 | 233 |
| 164 | 389 | 79 | 42 | 42 | 35 | 1 | 458 | 3,807 | 47,903 | [b]63,861 | [b]66,396 | .... |
| .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 233 | .... |
| 164 | 463 | 79 | 67 | 67 | 60 | 1 | 458 | 3,807 | 71,157 | [b]94,940 | [b]98,790 | .... |

are, to avoid counting them twice, not
5,000, and that of the Volunteers, 35,000

H. C. CORBIN,
*Adjutant-General.*

## JULY 1, 1

| March, 1 | |
|---|---|
| Officers. | En |
| 440 | |
| 2,315 | |
| | |
| 19 | |
| 75 | |
| 70 | |
| 22 | |
| 50 | |
| 277 | |
| | |
| 68 | |
| 98 | |
| 123 | |
| 29 | |
| 378 | |
| 3,964 | |

JSES [illegible] 1, 1899

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 54 | 2 | 1 | 5 | 1 | 37 | 107 | 2,140 | 1 | 9 | ...... | 8 |
| First United | 2 | 1 | .... | .... | 2 | 1 | 88 | 382 | ...... | ........ | ...... | ........ |
| Second Unit | 21 | 1 | .... | .... | .... | 2 | 51 | 412 | ...... | ........ | ...... | ........ |
| Third Unite | 13 | 1 | 6 | 2 | .... | 3 | 89 | 363 | ...... | 24 | ...... | 1 |
| Fourth Unit | 31 | 1 | 4 | 4 | 1 | 2 | 27 | 564 | 2 | 23 | ...... | 1 |
| Fifth United | 7 | 1 | .... | .... | 1 | 3 | 56 | 358 | ...... | ........ | ...... | ........ |
| Sixth Unite | 9 | 2 | .... | .... | 1 | ...... | 140 | 455 | ...... | ........ | ...... | ........ |
| Seventh Uni | 9 | 1 | .... | 1 | 1 | 1 | 71 | 414 | ...... | ........ | ...... | ........ |
| Eighth Unit | 5 | 1 | .... | .... | 1 | ...... | 34 | 325 | ...... | ........ | ...... | ........ |
| Ninth Unite | 6 | 2 | 1 | .... | 4 | 4 | 11 | 252 | ...... | ........ | ...... | ........ |
| Tenth Unite | 8 | 2 | 3 | .... | .... | 1 | ........ | 231 | ...... | ........ | ...... | ........ |
| Total | 111 | 13 | 14 | 7 | 11 | 17 | 567 | 3,756 | 2 | 47 | ...... | 2 |
| First United | 8 | .... | 1 | .... | .... | 1 | 104 | 443 | ...... | ........ | ...... | 1 |
| Second Unit | 8 | 1 | 1 | 1 | .... | 3 | 89 | 461 | ...... | ........ | ...... | ........ |
| Third Unite | 9 | 1 | 1 | 1 | 2 | 3 | 138 | 1,003 | ...... | 6 | ...... | ........ |
| Fourth Unit | 1 | .... | 1 | 1 | 1 | 4 | 81 | 355 | ...... | 2 | ...... | ........ |
| Fifth United | 5 | .... | .... | 1 | .... | ...... | 158 | 545 | 1 | 6 | ...... | ........ |
| Sixth Unite | 17 | 2 | .... | 1 | 1 | 1 | 22 | 317 | ...... | 2 | ...... | ........ |
| Seventh Un | 9 | 2 | 1 | 1 | .... | 3 | 226 | 509 | ...... | ........ | ...... | ........ |
| Total | 57 | 6 | 5 | 6 | 4 | 15 | 818 | 3,633 | 1 | 16 | ...... | 1 |
| First United | 18 | .... | 2 | 1 | .... | 2 | 80 | 369 | ...... | ........ | ...... | ........ |
| Second Unit | 5 | .... | 1 | 1 | 1 | 3 | 46 | 352 | ...... | ........ | ...... | ........ |
| Third Unite | 26 | 1 | 3 | 1 | 1 | 1 | 16 | 255 | ...... | 3 | ...... | 1 |
| Fourth Unit | 43 | .... | 2 | 1 | .... | 1 | 46 | 394 | ...... | 22 | ...... | ........ |
| Fifth Unite | 30 | 1 | .... | 1 | .... | 2 | 77 | 320 | ...... | ........ | ...... | ........ |
| Sixth Unite | 29 | 1 | 4 | 1 | 1 | ...... | ........ | 177 | 1 | 27 | ...... | ........ |
| Seventh Un | 8 | 1 | 1 | 2 | .... | 3 | 72 | 445 | 1 | ........ | ...... | ........ |
| Eighth Unit | 12 | .... | .... | 1 | .... | 3 | 98 | 425 | ...... | ........ | ...... | ........ |
| Ninth Unite | 50 | .... | .... | 1 | 2 | 3 | 35 | 275 | ...... | 21 | ...... | ........ |
| Tenth Unite | 5 | 1 | 1 | 1 | .... | 4 | 55 | 336 | ...... | ........ | ...... | ........ |
| Eleventh U | 13 | 1 | .... | 1 | 2 | 2 | 15 | 303 | ...... | ........ | ...... | ........ |
| Twelfth Un | 46 | 2 | 2 | .... | .... | 2 | 24 | 318 | 2 | 22 | ...... | ........ |
| Thirteenth | 38 | 1 | 2 | .... | 2 | 2 | 21 | 261 | 1 | 9 | ...... | 8 |
| Fourteenth | 33 | 1 | 1 | 1 | 1 | 5 | 31 | 951 | 1 | 12 | ...... | ........ |
| Fifteenth U | 10 | .... | .... | 2 | 1 | 1 | 120 | 389 | ...... | ........ | ...... | ........ |
| Sixteenth U | 32 | 2 | 4 | .... | 1 | ...... | 11 | 187 | 2 | 15 | ...... | 1 |
| Seventeenth | 40 | 1 | .... | 2 | 1 | ...... | 33 | 243 | 3 | 29 | ...... | ........ |
| Eighteenth | 33 | 1 | 1 | 1 | .... | ...... | 1 | 873 | 2 | 26 | ...... | ........ |
| Nineteenth | 27 | 2 | 1 | .... | 1 | 3 | 73 | 268 | 1 | 31 | ...... | 8 |
| Twentieth U | 10 | .... | 1 | .... | .... | 2 | 17 | 261 | ...... | ........ | ...... | ........ |
| Twenty-first | 61 | .... | 5 | .... | .... | ...... | 28 | 306 | 2 | 33 | ...... | ........ |
| Twenty-seco | 50 | 1 | 2 | 2 | .... | 2 | 16 | 306 | 1 | 8 | ...... | ........ |
| Twenty-thir | 14 | .... | .... | 2 | .... | 1 | 8 | 807 | 1 | 21 | ...... | ........ |
| Twenty-four | 28 | 1 | 17 | 1 | .... | 2 | 23 | 248 | ...... | 16 | ...... | 6 |
| Twenty-fifth | 11 | 2 | 3 | .... | 4 | 3 | 9 | 172 | ...... | 14 | ...... | 1 |
| Total | 672 | 20 | 53 | 23 | 18 | 47 | 955 | 9,241 | 18 | 309 | ...... | 15 |
| West Point | .... | .... | .... | .... | .... | 5 | 12 | 77 | ...... | ........ | ...... | ........ |
| Indian scout | 2 | .... | .... | .... | .... | ...... | ........ | 22 | ...... | ........ | ...... | ........ |
| Electrician | .... | .... | .... | .... | .... | ...... | ........ | ........ | ...... | ........ | ...... | ........ |
| Recruits at | 13 | 1 | 1 | .... | .... | 2 | 404 | 1,735 | ...... | ........ | ...... | ........ |
| Total | 15 | 1 | 1 | .... | .... | 7 | 416 | 1,834 | ...... | ........ | ...... | ........ |
| Grand | 909 | 42 | 74 | 41 | 34 | 123 | 2,863 | 20,604 | 22 | 381 | ...... | 21 |

H. C. CORBIN,
*Adjutant-General, U. S. A.*

SES SINCE JULY 1, 1899.

| | | | | | | WOUNDED. | | MISSING. | |
|---|---|---|---|---|---|---|---|---|---|
| | Drowned. | Suicide. | Murder or homicide. | Deserted. | Total. | Officers. | Enlisted men. | Officers. | Enlisted men. |
| General officer | | | | | | | | | |
| Adjutant-Gene | | | | | | | | | |
| Inspector-Gene | | | | | | | | | |
| Judge-Advocat | | | | | | | | | |
| Quartermaster | | | | | | 2 | | | |
| Subsistence De | | | | | | | | | |
| Medical Depar | | | | | | | | | |
| Pay Departme | | | | | | | | | |
| Engineer Depa | | | | | | | | | |
| Signal Corps... | | | | | 163 | | | | |
| Total .... | | | | | 163 | 2 | | | |
| Eleventh Caval | 1 | 1 | | 22 | 78 | 4 | 25 | | |
| Squadron Phil | | | | | 1 | | | | |
| First Troop Ne | | | | | 35 | | | | |
| Total .... | 1 | 1 | | 22 | 114 | 4 | 25 | | |
| California Vol | | | | | 78 | | | | |
| Utah Voluntee | | | | | 4 | | | | |
| Wyoming Volu | | | | | 26 | | | | |
| Total .... | | | | | 108 | | | | |
| First California | | | | | 136 | | 1 | | |
| First Colorado | | | | | 148 | | | | |
| First Idaho Vo | | | | | 106 | | | | |
| Fifty-first Iowa | | | | | 182 | 1 | 5 | | |
| Twentieth Kan | | | | | 184 | | | | |
| Thirteenth Min | | | | | 113 | | | | |
| First Montana | | | | | 195 | | | | |
| First Nebraska | | | | 1 | 2 | | | | |
| First North Da | | | | | 89 | | | | |
| Second Oregon | | | | | 35 | | | | |
| Tenth Pennsyl | | | | | 3 | | | | |
| First South Da | | | | | 123 | | | | |
| First Tennesse | | | | | 281 | | | | |
| First Washingt | | | | | 155 | | 2 | | |
| First Wyoming | | | | | 48 | | | | |
| Twenty-sixth I | | | | 89 | 318 | 1 | 25 | | 1 |
| Twenty-sevent | 2 | | 1 | 96 | 308 | | 5 | | 1 |
| Twenty-eighth | 1 | | | 151 | 432 | 1 | 16 | | |
| Twenty-ninth I | | | | 34 | 240 | 1 | 3 | | 2 |
| Thirtieth Infan | 2 | 1 | | 19 | 165 | 1 | 15 | | 8 |
| Thirty-first Inf | 2 | | | 39 | 214 | | | | |
| Thirty-second I | 1 | | | 32 | 262 | 1 | 5 | | 1 |
| Thirty-third In | 1 | | | 15 | 132 | 1 | 41 | | 1 |
| Thirty-fourth I | 3 | | | 23 | 190 | | 14 | | 2 |
| Thirty-fifth Inf | | 2 | | 35 | 213 | 2 | 18 | | 2 |
| Thirty-sixth In | | 2 | | 14 | 86 | 7 | 22 | | |
| Thirty-seventh | 3 | | | 19 | 89 | 1 | 19 | | 2 |
| Thirty-eighth I | 1 | | 1 | 31 | 357 | 2 | 17 | | |
| Thirty-ninth In | 2 | | | 28 | 318 | 3 | 22 | | 1 |
| Fortieth Infant | | | | 29 | 232 | 4 | 41 | | 1 |
| Forty-first Infa | 1 | | | 106 | 263 | | | | |
| Forty-second In | | | 1 | 48 | 254 | 1 | 4 | | |
| Forty-third Inf | 2 | | 1 | 68 | 247 | 3 | 47 | | 3 |
| Forty-fourth In | | | 1 | 16 | 169 | 1 | 6 | | |
| Forty-fifth Infa | 1 | | | 37 | 271 | 1 | 18 | | 1 |
| Forty-sixth Inf | | | | 53 | 279 | | 6 | | |
| Forty-seventh I | | | | 106 | 313 | 2 | 36 | | |
| Forty-eighth In | 4 | | | 14 | 90 | | 4 | | |
| Forty-ninth Inf | 2 | | 1 | 5 | 327 | | 1 | | |
| Porto Rico Regi | | 1 | 1 | | 80 | | | | |
| Total .... | 28 | 6 | 7 | 1,108 | 7,649 | 34 | 393 | | 26 |
| Grand tot | 29 | 7 | 7 | 1,130 | 8,034 | 40 | 418 | | 26 |

ADJU

H. C. CORBIN,
*Adjutant-General, U. S. A.*

WAR

G.—*Deaths in the armies of the United States between July 1, 1899, and June 30, 1900.*

| Country. | Killed. | | Died of wounds. | | Disease. | | Accident. | | Drowned. | | Suicide. | | Murder or homicide. | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. |
| **REGULARS.** | | | | | | | | | | | | | | | | |
| United States | .... | .... | 2 | .... | 8 | 167 | 2 | 14 | .... | 9 | .... | 17 | .... | 12 | 12 | 219 |
| Cuba | .... | .... | .... | .... | 3 | 125 | .... | 7 | .... | 6 | .... | 5 | .... | 3 | 3 | 146 |
| Alaska | .... | .... | .... | .... | .... | 2 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 3 |
| Porto Rico | .... | .... | .... | .... | .... | 21 | .... | 2 | .... | .... | .... | 2 | .... | 3 | .... | 28 |
| Hawaiian Islands | .... | .... | .... | .... | 1 | 3 | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 3 |
| Philippine Islands | 14 | 105 | 4 | 22 | 5 | 528 | 1 | 19 | 1 | 58 | 1 | 14 | .... | 16 | 26 | 762 |
| At sea | .... | .... | .... | .... | 2 | 63 | .... | .... | .... | .... | .... | 3 | .... | .... | 2 | 66 |
| Total | a14 | 105 | a6 | 22 | a19 | 909 | 3 | 42 | 1 | 74 | a1 | 41 | .... | 34 | a44 | 1,227 |
| **VOLUNTEERS.** | | | | | | | | | | | | | | | | |
| United States | .... | .... | 1 | .... | .... | 32 | .... | 8 | .... | 2 | 1 | 1 | .... | 2 | 2 | 45 |
| Cuba | .... | .... | .... | .... | 4 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 4 | .... |
| Alaska | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Porto Rico | .... | .... | .... | .... | .... | 4 | .... | 2 | .... | .... | .... | 1 | .... | 1 | .... | 8 |
| Hawaiian Islands | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 |
| Philippine Islands | 5 | 162 | 2 | 43 | 9 | 374 | .... | 17 | 2 | 26 | 5 | 5 | .... | 4 | 23 | 631 |
| At sea | .... | .... | .... | .... | 1 | 17 | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | 18 |
| Total | a5 | 162 | a3 | 43 | a14 | 428 | .... | 27 | 2 | 29 | a6 | 7 | .... | 7 | a30 | 703 |
| Aggregate | a17 | 267 | a8 | 65 | a30 | 1,337 | 3 | 69 | 3 | 103 | a6 | 48 | .... | 41 | a67 | 1,930 |

[a] Seven officers of the Regular Army who died also held commissions in the Volunteer forces, in which they are included, and are, to avoid counting twice, deducted from the aggregate.

H. C. CORBIN,
*Adjutant-General, U. S. A.*

ADJUTANT-GENERAL'S OFFICE,
*Washington, D. C., October 1, 1900.*

## H.—*Dates of sailing and troops sent to Philippine Islands.*

[Maj. Gen. Arthur MacArthur relieved General Otis in command of the Division of the Philippines May 5, 1900. At the date of last report there had been forwarded to the Philippines 775 officers and 61,917 enlisted men. Since that time transports carrying troops have left as herein indicated.]

| Date of sailing. | Transport. | Commanding officer. | Command. | Strength. | | Date of arrival in Manila. |
|---|---|---|---|---|---|---|
| | | | | Officers. | Enlisted men. | |
| 1899. | | | | | | |
| Oct. 26 | Tartar | Lt. Col. R. W. Leonard, 28th Inf | A, B, C, D, E, F, G, and H, 28th Inf | 31 | 829 | Nov. 23, 1899 |
| Do | Manauense | Lt. Col. W. C. Hayes, 31st Inf | Field and staff, I, K, L, M, 31st Inf | 15 | 380 | Nov. 27, 1899 |
| Do | Newport | Maj. J. B. Porter, 28th Inf | I, K, L, M, 28th Inf., dets. offs. Hosp. Corps and Sig. Corps. | 27 | 431 | Nov. 23, 1899 |
| Oct. 28 | City of Peking | Col. J. S. Pettit, 31st Inf | Hdqrs., A, B, C, D, E, F, G, H, 31st Inf., dets. offs. Hosp. Corps and rects. | 39 | 938 | Nov. 27, 1899 |
| Nov. 3 | Pennsylvania (from Portland, Oreg.) | Col. R. L. Bullard, 39th Inf | A, B, C, D, E, F, G, H, 39th Inf., det. offs. Hosp. Corps and rects. | 33 | 989 | Dec. 7, 1899 |
| Do | Olympia (from Portland, Oreg.) | Maj. J. H. Parker, 39th Inf | I, K, L, M, 39th Inf., L, M, 45th Inf., det. Hosp. Corps. | 24 | 680 | Do. |
| Nov. 4 | Thomas (from New York City) | Col. Walter Howe, 47th Inf | 47th Inf., and det. rects | 52 | 1,323 | Dec. 22, 1899 |
| Nov. 14 | City of Sydney | Col. W. S. Schuyler, 46th Inf | Hdqrs., A, B, C, D, E, F, 46th Inf., dets. offs. and rects. | 35 | 668 | Dec. 15, 1899 |
| Do | Pathan | Maj. S. W. Miller, 46th Inf | G, H, I, K, L, M, 46th Inf | 22 | 614 | Do. |
| Nov. 16 | Meade (from New York City) | Col. A. Murray, 43d Inf | Hdqrs., A, B, C, D, E, F, G, H, I, K, 43d Inf., det. Hosp. Corps. | 41 | 1,080 | Dec. 31, 1899 |
| Do | Senator | Col. J. H. Dorst, 45th Inf | Hdqrs., E, F, G, H, I, 45th Inf., dets. offs. Hosp. Corps and rects. | 21 | 605 | Dec. 21, 1899 |
| Do | Benmohr | Maj. D. A. Frederick, 45th Inf | A, B, C, D, K, 45th Inf., A, N, 6th Art., dets. off. and rects. | 24 | 716 | Do. |
| Nov. 20 | Hancock | Col. E. J. McClernand, 44th Inf | Hdqrs., A, E, F, G, H, I, K, L, M, 44th Inf., dets. off. and Hosp. Corps. | 40 | 981 | Dec. 19, 1899 |
| Do | City of Pueblo | Maj. H. Hale, 44th Inf | B, C, D, 44th Inf., L, M, 43d Inf., dets. off. and Hosp. Corps. | 25 | 572 | Do. |
| Do | Logan (from New York City) | Col. E. T. C. Richmond, 41st Inf | 41st Inf | 52 | 1,313 | Jan. 5, 1900 |
| Nov. 21 | St. Paul | Col. G. S. Anderson, 38th Inf | Hdqrs., E, F, G, H, K, L, 38th Inf., dets. offs. and rects. | 29 | 664 | Dec. 26, 1899 |
| Do | Duke of Fife | Maj. C. H. Muir, 38th Inf | A, B, C, D, I, M, 38th Inf., dets. off. and men | 22 | 728 | Do. |
| Nov. 24 | Ohio | Col. E. A. Godwin, 40th Inf | Hdqrs., A, B, C, D, L, M, 40th Inf., dets. off. Hosp. Corps and rects. | 23 | 881 | Dec. 26, 1899 |
| Do | Indiana | Maj. W. E. Craighill, 40th Inf | E, F, G, H, I, K, 40th Inf., dets. off. and rects | 29 | 720 | Do. |
| Nov. 30 | Dabney Vostock | Maj. W. C. Brown, 42d Inf | A, B, C, D, E, F, G, 42d Inf., det. Hosp. Corps | 26 | 725 | Dec. 31, 1899 |
| Do | Columbia | Lt. Col. J. H. Beacom, 42d Inf | Hdqrs., H, I, K, L, M, 42d Inf., dets. Hosp. Corps | 21 | 549 | Do. |
| Dec. 2 | Warren | Col. W. H. Beck, 49th Inf | Hdqrs., A, B, C, D, E, F, G, H, 49th Inf., det. Hosp. Corps. | 35 | 863 | Jan. 2, 1900 |
| Dec. 6 | Sherman | Maj. G. W. Kirkman, 49th Inf | I, K, L, M, 49th Inf., dets. offs. Hosp. Corps, Sig. Corps rects. | 26 | 622 | Do. |
| Dec. 13 | Victoria | Capt. J. S. Michael, A. Q. M. Vols | Det. with 28 horses, 316 mules | 1 | 12 | Jan. 6, 1900 |
| Dec. 21 | Grant | Col. W. P. Duvall, 48th Inf | 48th Inf., dets. off. men, Hosp. Corps | 51 | 1,314 | Jan. 25, 1900 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Dec. 23 | Westminster | 2d Lt. W. H. Winters, 3d Cav | Det. with 226 horses, 80 mules | 1 | 7 | Feb. 6, 1900 |
| 1900. | | | | | | |
| Jan. 10 | Aztec | Capt. G. H. G. Gale, 4th Cav | Det. with 165 horses, 185 mules | 2 | 2 | Feb. 23, 1900 |
| Jan. 11 | Tartar | Col. H. B. Freeman, 24th Inf | Det. off. and rects | 16 | 458 | Feb. 7, 1900 |
| Jan. 17 | Sheridan (from Tacoma, Wash.) | Maj. L. H. Roudiez, Q. M. Vols | Det. off. and men | 1 | 11 | Feb. 18, 1900 |
| Jan. 19 | Port Albert (from Seattle, Wash.) | Capt. W. S. Wood, A. Q. M | Civ. employees, 400 horses, 115 mules | 1 | 1 | Mar. 16, 1900 |
| Jan. 25 | Pennsylvania | 1st Lt. T. B. Seigle, 38th Inf | Dets. off. and men, Hosp. and Sig. Corps | 5 | 30 | Feb. 24, 1900 |
| Feb. 17 | Sherman | Maj. C. D. Cowles, 17th Inf | Dets. off., Hosp. Corps, Sig. Corps and recruits | 9 | 353 | Mar. 14, 1900 |
| Mar. 1 | Thomas | Capt. E. F. Glenn, 25th Inf | Det. off., Hosp. Corps, Sig. Corps, and recruits | 9 | 88 | Mar. 27, 1900 |
| Mar. 17 | Meade | Lt. L. R. Burgess, 5th Art | Dets. off., Hosp. Corps, Signal Corps and recruits | 9 | 98 | Apr. 15, 1900 |
| Mar. 31 | Sumner (from New York City) | Col. Wirt Davis, 3d Cav | Dets. off. and recruits | 46 | 695 | May 23, 1900 |
| Apr. 1 | Grant | Capt. C. D. Palmer, A. Q. M | Dets. off. men, Hosp. Corps, Sig. Corps | 2 | 144 | Apr. 30, 1900 |
| May 1 | Warren | Capt. E. L. King, 11th Cav | Dets. off. men, Hosp. and Sig. Corps and recruits | 16 | 467 | May 28, 1900 |
| May 16 | Logan | Col. C. C. C. Carr, 4th Cav | Det. off. and men | 7 | 161 | June 14, 1900 |
| June 1 | Sherman | Maj. M. C. Foote, 9th Inf | Det. off., Hosp. Corps, and enl. men | 8 | 22 | June 28, 1900 |
| June 16 | Thomas | Maj. C. A. Williams, 17th Inf | Det. off., Hosp. Corps, and rects | 7 | 392 | July 17, 1900 |
| July 1 | Conemaugh *a* | 1st Lt. E. R. Heiberg, 6th Cav | Det. with 147 horses, 94 mules | 2 | 24 | Aug. 5, 1900 |
| Do | Leelawna *a* | 1st Lt. C. D. Rhodes, 6th Cav | Det. with 252 horses | 2 | 32 | Aug. 8, 1900 |
| July 3 | Grant *a* | Gen. A. R. Chaffee, U. S. Vols | A, B, C, D, I, K, L, M, 6th Cav., and rects | 27 | 1,090 | July 28, 1900 |
| July 6 | Lennox (from Portland, Oreg.) *a* | 1st Lt. F. C. Marshall, 6th Cav | Det. with 370 horses, 100 mules | 2 | 43 | Aug. 2, 1900 |
| July 17 | Sumner *a* | Col. E. Moale, 15th Inf | Hdqrs., A, B, C, D, 15th Inf., and offs | 30 | 542 | Aug. 16, 1900 |
| July 29 | Hancock *a* | Maj. R. Dickens, Marine Corps | A, D, I, O, 3d Art., and rects | 13 | 476 | Aug. 21, 1900 |
| Aug. 1 | Meade | Lt. Col. Constant Williams, 15th Inf | I, K, L, M, 15th Inf., B, G, H, I, 3d Cav., E, Engrs., dets. off., Hosp. Corps, and recruits. | 40 | 1,057 | Sept. 4, 1900 |
| Aug. 7 | Garrone (from Seattle, Wash.) | Lt. Col. T. C. Lebo, 1st Cav | Hdqrs., A, B, C, D, I, K, L, M, 1st Cav., det. Hosp. Corps. | 22 | 762 | Sept. 7, 1900 |
| Aug. 11 | Pakling (from Seattle, Wash.) | Lt. E. A. Hickman, 1st Cav | Det. with 889 horses and 12 mules | 2 | 97 | Sept. 9, 1900 |
| Aug. 16 | Warren | Col. T. McGregor, 9th Cav | Hdqrs., A, B, C, D, E, F, G, H, 9th Cav., dets. off., Hosp. Corps, and rects. | 39 | 987 | Sept. 16, 1900 |
| Do | Aztec | Lt. C. A. Hedekin, 3d Cav | Det. with 452 horses and 50 mules | 2 | 53 | Sept. 20, 1900 |
| Do | Athenian (from Seattle, Wash.) | Capt. L. C. Baker, A. Q. M. Vols | Det. 1st and 9th Cav | 2 | 28 | Sept. 24, 1900 |
| Aug. 21 | Sherman | Maj. G. P. Borden, 5th Inf | E, F, G, H, 2d Inf., I, K, L, M, 5th Inf., I, K, L, M, 8th Inf., dets. Hosp. Corps and Sig. Corps. | 37 | 1,546 | Sept. 16, 1900 |
| Aug. 22 | Strathgyle | Lt. C. E. Stoddert, 9th Cav | Det. with 676 horses and 44 mules | 2 | 80 | Oct. 4, 1900 |
| Sept. 1 | Logan | Col. A. A. Harbach, 1st Inf | 1st and 2d Battn. 1st Inf. and 3d Battn. 2d Inf | 41 | 1,625 | Oct. 1, 1900 |
| Sept. 3 | Rosecrans | Maj. G. G. Greenough, 7th Art | C, M, 7th Art., and det | 7 | 534 | Oct. 8, 1900 |
| Sept. 4 | Federica | Lt. L. G. Berry, 7th Art | Det. 7th Art | 3 | 35 | Oct. 15, 1900 |
| Sept. 18 | Thomas | Col. R. Comba, 5th Inf | 1st Battn. 5th Inf., and 2d Battn. 8th Inf., and det | 39 | 1,538 | |
| Sept. 25 | Lennox (from Portland, Oreg.) | Lt. A. M. Ferguson, 36th Inf | 40 civ. employees, 370 horses, and 40 mules | 2 | 1 | |
| Oct. 1 | Hancock | Maj. J. C. Dent, 24th Inf | B, D, M, 24th Inf., A, C, D, G, 25th Inf., and det | 15 | 903 | |
| | Total | | | 1,207 | 33,874 | |

*a* Sent to China; place of arrival, Taku.

Transports sailed from San Francisco unless otherwise indicated.

H. C. CORBIN,
*Adjutant-General, U. S. A.*

ADJUTANT-GENERAL'S OFFICE,
*Washington, D. C., October 1, 1900.*

I.—*Casualties in actions of troops serving in China between July 1, 1900, and October 1, 1900.*

| Organization. | Killed. | | Wounded. | | Total. | | Aggregate. |
|---|---|---|---|---|---|---|---|
| | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | |
| Hospital Corps | | | | 1 | | 1 | 1 |
| Sixth U.S. Cavalry | | | | 6 | | 6 | 6 |
| Fifth U.S. Artillery | 1 | | | 3 | 1 | 3 | 4 |
| Ninth U.S. Infantry | 1 | 19 | 7 | 81 | 8 | 100 | 108 |
| Fourteenth U.S. Infantry | | 11 | | 79 | | 90 | 90 |
| Total | 2 | 30 | 7 | 170 | 9 | 200 | 209 |

H. C. Corbin,
*Adjutant-General, U. S. A.*

Adjutant-General's Office,
*Washington, D. C., October 1, 1900.*

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive.*

| Date. | Place. | Troops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1899. | | | | | | | |
| Feb. 4 | Manila | 1st Colo.; 20th Kans.; 1st Nebr.; C, F, H, I, K, L, M, 1st Mont.; D, E, H, K, 10th Pa.; A, F, G, H, I, K, L, M, 1st S. Dak.; Utah Art.; G, H, K, L, 3d Art. | | 1 | 1 | 5 | 1st Lieut. C. S. Haughwout, 1st Colo., wounded. |
| Feb. 5 | Chinese hospital | C, F, G, H, I, K, L, 1st Mont.; C, D, E, H, I, K, 10th Pa.; G, H, K, L, 3d Art. | | | | 6 | |
| Do | La Loma church | 20th Kans.; 1st S. Dak.; C, D, E, H, I, K, 10th Pa.; B, Utah Art.; G, H, K, L, 3d Art. | | 10 | 2 | 39 | Maj. Everhart Bierer, 10th Pa., and 2d Lieut. R. S. Abernethy, 3d Art., wounded. |
| Do | Pasay | C, E, G, K, L, 4th Cav.; A, C, D, E, F, G, I, K, L, M, 14th Inf.; B, C, D, G, H, K, 1st N. Dak.; A, C, E, F, 1st Tenn. | | 10 | 1 | 34 | 1st Lieut. James Mitchell, 14th Inf., wounded. |
| Do | San Juan Hill | 1st Nebr.; D, I, 1st Colo.; B, D, L, M, 1st Tenn.; A, B, Utah Art. | | 4 | | 16 | |
| Do | Santa Ana | 1st Cal.; 1st Idaho; 1st Wash.; 1st Wyo.; D, 6th Art. | 1 | 14 | 4 | 73 | Maj. Edward McConville, 1st Idaho, killed; Capt. Albert H. Otis, 1st Lieut. Edward K. Erwin, 2d Lieut. Joe Smith, 1st Wash., and 1st Lieut. Chas. J. Hogan, 1st Cal., wounded. |
| Do | Santa Mesa | B, E, F, G, K, L, 1st Colo.: A, Utah Art. | | 4 | | 5 | |
| Do | Singalon | I, 4th Cav.; I, 1st N. Dak. | | | | | |
| Feb. 6 | Pumping station | 1st Nebr.; D, I, 1st Colo.; C, G, K, 2d Oreg.; B, D, L, M, 1st Tenn.; B, I, K, M, 23d Inf.; A, Utah Art. | | 2 | | 2 | |
| Do | San Pedro Macati | 1st Idaho; 1st Cal. | | | | 2 | |
| Do | Santa Ana | 1st Idaho; 1st Wash. | | | | | |
| Feb. 7 | Caloocan | 1st Mont. | | | | 1 | |
| Do | Near Manila | C, 1st Cal.; B, C, E, I, 20th Kans.; G, H, K, L, 3d Art. | 1 | 2 | | 8 | 1st Lieut. A. C. Alvord, 20th Kans., killed. |
| Do | Mariquina | B, I, K, M, 23d Inf.; 1st Nebr.; 2d Oreg. | | | | | |
| Feb. 9 | Near Manila | G, 1st N. Dak.; B, Utah Art. | | | | 2 | |
| Do | Pateros | 1st Wash.; C, H, 1st Cal. | | | | | |
| Do | San Roque | B, C, E, G, I, K, L, M, 51st Iowa; A, D, Cal. Art.; A, Nev. Cav. | | | | | |
| Feb. 10 | Caloocan | C, E, G, 4th Cav.; B, I, K, M, 23d Inf., 1st Idaho; 20th Kans.; 13th Minn.; A, B, D, F, G, I, K, L, M, 1st Mont.; A, B, Utah Art.; D, 6th Art.; G, H, K, L, 3d Art. | | 5 | 4 | 41 | Lieut. Col. R. B. Wallace, Capt. W. L. Hill, 2d Lieut. W. C. Gardenshire, 1st Mont., and Capt. C. M. Christy, 20th Kans., wounded. |
| Feb. 11 | do | 20th Kans.; D, 13th Minn. | | | | 6 | |
| Do | Iloilo | G, 6th Art.; 2d Battn., 18th Inf.; 1st Battn., 1st Tenn. | | | | | |
| Do | Malabon | 1st Idaho | | | 1 | 1 | Capt. T. R. Hamer, 1st Idaho, wounded. |
| Do | Near Manila | C, F, 14th Inf.; B, Utah Art. | | | | 3 | |
| Do | Paranaque | K, L, 4th Cav. | | | | | |
| Feb. 12 | Caloocan | 1st Mont., 20th Kans. | | | | 2 | |
| Do | Jaro | 1st Tenn.; A, B, C, E, H, I, K, L, 18th Inf.; G, 6th Art. | | | 1 | 3 | 2d Lieut. F. C. Bolles, 18th Inf., wounded. |
| Do | Malabon | 1st Idaho | | | | | |
| Feb. 13 | Caloocan | 20th Kans. | | | | 2 | |
| Do | Guadalupe | D, G, L, M, 1st Cal.; A, B, Utah Art. | | | 1 | | 2d Lieut. G. A. Seaman, Utah Art., wounded |
| Do | Jolo bridge | B, D, L, M, 1st Tenn.; det. 18th Inf.; G, 6th Art. | | | | | |
| Feb. 14 | Jaro | A, 18th Inf. | | 1 | | 1 | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1899. | | | | | | | |
| Feb. 14 | Pateros | C, H, 1st Cal.; 1st Wash | | | | 7 | |
| Do. | San Pedro Macati | 1st Wash | | | | 1 | |
| Feb. 15 | Guadalupe | 1st Idaho, Utah Art | | | | | |
| Do. | Mariquina | H, 1st Nebr | | | | 1 | |
| Do. | Jolo | B, L, 1st Tenn.; G, 6th Art | | | | | |
| Do. | Paranaque | I, K, 4th Cav | | | | 1 | |
| Do. | Pateros | C, D, F, H, 1st Cal | | | | | |
| Do. | San Pedro Macati | 1st Wash | | | | 1 | |
| Feb. 16 | Near Pateros | C, D, F, I, 1st Cal | | | | | |
| Do. | San Pedro Macati | 1st Wash | | | | 1 | |
| Feb. 17 | Caloocan | 20th Kans | | | | 1 | |
| Do. | Guadalupe | G, I, L, M, 1st Cal | | | | | |
| Do. | Mariquina road | A, C, E, F, G, I, 1st Nebr | | | 2 | 6 | Capt. A. H. Hollingsworth and 2d Lieut. B. D. Wheadon, 1st Nebr., wounded. |
| Feb. 19 | Aravila | A, B, D, F, L, M, 1st Tenn.; G, 6th Art | | | | | |
| Do. | San Pedro Macati | 1st Wash | | | | 1 | |
| Feb. 20 | Guadalupe church | K, M, 1st Wash | | 2 | | | |
| Do. | San Pedro Macati | L, M, 1st Cal | | | | 5 | |
| Feb. 21 | do | K, 1st Cal | | 1 | | 1 | |
| Feb. 22 | Guadalupe church | E, H, 1st Wash.; H, 2d Oreg | | 2 | | 4 | |
| Do. | Pumping station | 1st Wyo.; D, F, H, K, L, 1st Nebr | | | | 3 | |
| Do. | Santalon | do | | | | | |
| Do. | Tondo | A, E, M, 2d Oreg.; C, D, G, L, M, 13th Minn | | | | 3 | |
| Feb. 23 | Caloocan | G, H, K, L, 3d Art.; A, Utah Art.; 1st Colo.; 20th Kans.; 1st Mont.; 10th Pa.; 1st S. Dak. | 1 | 3 | 1 | 23 | 2d Lieut. E. S. French, 1st Mont., killed; 2d Lieut. Philip Greenan 1st Mont., wounded. |
| Do. | Tondo | G, K, M, 23d Inf.; C, M, 13th Minn.; L, 1st Mont.; E, M, 2d Oreg | | 1 | 1 | 9 | Capt. Noyes C. Robinson, 13th Minn., wounded. |
| Feb. 24 | Caloocan | G, H, K, L, 3d Art.; 20th Kans.; 1st Mont | | | 1 | 5 | 1st Lieut. W. A. Callahan, 20th Kans., wounded. |
| Do. | Cruznaligas | A, Utah Art.; C, G, K, 2d Oreg.; A, 1st Nebr | | | | 1 | |
| Do. | La Paz | G, H, I, K, 1st Tenn.; G, 6th Art | | | | | |
| Do. | San Pedro Macati | C, D, F, H, 1st Idaho | | | | 1 | |
| Feb. 25 | Caloocan | 20th Kans | | | | 1 | |
| Do. | Manduriao | G, H, I, K, 1st Tenn.; G, 6th Art | | | | | |
| Feb. 26 | Caloocan | H, 13th Minn.; 20th Kans.; 1st Mont.; 10th Pa | | | | 4 | |
| Feb. 27 | Near Caloocan | 1st S. Dak | | | | 2 | |
| Do. | San Pedro Macati | 1st Cal | | | | 1 | |
| Feb. 28 | Caloocan | 20th Kans., 1st Mont | 1 | | | 3 | Capt. D. S. Elliott, 20th Kans., killed. |
| Do. | San Pedro Macati | K, F, 1st Cal | | | | 2 | |
| Mar. 1 | Jaro | A, B, C, E, H, I, K, L, 18th Inf.; G, 6th Art | | 1 | | | |
| Mar. 2 | Caloocan | 1st Mont | | | | 1 | |
| Do. | San Roque | A, Cal. Art.; Wyo. Lt. Batty.; det. 51st Iowa | | | | 1 | |
| Mar. 3 | La Paz | 1st Tenn.; G, 6th Art | | | | | |
| Do. | San Pedro Macati | 1st Wash.; A, B, Utah Art | | | | 3 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 4 | Laguna de Bay | G, 3d Art | | 1 | | 1 | |
| Do | San Pedro Macati | E, L, 23d Inf.; G, L, 1st Cal | | | | 8 | |
| Mar. 5 | Mariquina road | B, E, H, 1st Nebr.; C, E, G, K, 2d Oreg | | | | | |
| Mar. 6 | Manila | Hospital Corps | | | | 1 | |
| Do | Mariquina road | A, Utah Art.; A, D, F, I, 1st Nebr.; C, E, G, K, 2d Oreg | | | | 5 | |
| Do | Pumping station | A, Utah Art.; K, L, M, 1st Nebr.; Hosp. Corps | | | | 1 | |
| Do | San Pedro Macati | 1st Wash.; D, 6th Art. | | | | 2 | |
| Mar. 7 | Pumping station | A, Utah Art.; A, H, I, M, 20th Inf.; B, E, G, H, I, K, M, 1st Nebr.; 1st Wyo. | | 2 | 2 | 6 | Capt. Claude H. Ough, 1st Nebr., and Capt. J. D. O'Brien, 1st Wyo., wounded. |
| Do | San Pedro Macati | 1st Wash | | 1 | | 1 | |
| Do | San Juan del Monte | 1st Wyo.; A, Utah Art | | | | | |
| Mar. 10 | Caloocan | 20th Kans | | 1 | | 1 | |
| Do | San Pedro Macati | C, D, F, H, 1st Idaho | | | 1 | | Capt. Edward Smith, 1st Idaho, wounded. |
| Mar. 11 | do | B, C, H, L, 22d Inf | | | | 1 | |
| Mar. 12 | Caloocan | C, 20th Kans | | | | 1 | |
| Do | San Pedro Macati | A, B, C, D, E, G, K, M, 2d Oreg | | | | | |
| Do | Caloocan | 20th Kans | | 1 | | | |
| Mar. 13 | Guadalupe church | E, I, K, 4th Cav.; D, 6th Art.; A, Utah Art.; 20th Inf.; A, B, D, E, G, I, L, M, 2d Oreg.; C, D, E, G, H, K, L, M, 1st Wash.; 22d Inf. | | 3 | | 20 | |
| Mar. 14 | Guadalupe | A, B, Utah Art.; D, K, 20th Inf.; E, I, 2d Oreg | | | | | |
| Do | Pasig | A, B, Utah Art.; A, B, C, E, G, I, L, M, 2d Oreg | | | | 4 | |
| Do | Pateros | E, I, K, 4th Cav.; D, 6th Art.; C, D, E, L, 1st Wash | | 1 | 1 | 4 | Capt. Fred. Wheeler, 4th Cav., wounded. |
| Mar. 15 | Caloocan | 1st Mont | | 1 | | | |
| Do | Pasig | E, I, K, 4th Cav.; D, 6th Art.; A, B, Utah Art.; 20th Inf.; B, D, E, I, L, M, 2d Oreg. | | 1 | | 3 | |
| Do | Taguig | C, D, E, G, K, L, 1st Wash.; D, 6th Art | | | | | |
| Mar. 16 | Cainta | C, F, G, L, 20th Inf | | 2 | | 13 | |
| Do | Jaro bridge | G, 6th Art.; A, B, C, E, H, I, K, L, 18th Inf.; L, 1st Cal.; B, C, L, M, 1st Tenn. | | 1 | | 15 | |
| Do | Mariquina | B, I, K, 1st Colo | | | 1 | 3 | Maj. C. H. Anderson, 1st Colo., wounded. |
| Do | San Pedro Macati | C, D, F, H, 1st Idaho | | | | 1 | |
| Mar. 17 | La Loma church | Det. 10th Pa.; A, Utah Art | | | | | |
| Mar. 18 | Taguig | G, H, 1st Wash.; D, E, G, M, 22d Inf | | 3 | 1 | 16 | Capt. F. B. Jones, 22d Inf., wounded. |
| Mar. 19 | Laguna de Bay | 2d Oreg | | 1 | | 1 | |
| Do | Taguig | C, D, H, K, M, 1st Wash.; D, E, G, M, 22d Inf | | | | 5 | |
| Mar. 20 | Binangonan | A, Utah Art | | | | | |
| Mar. 21 | Mariquina road | E, 1st Colo | | | | 1 | |
| Mar. 23 | Caloocan | 20th Kans | | 1 | | 1 | |
| Mar. 24 | do | do | | | | 3 | |
| Mar. 25 | Bacza | E, I, K, 4th Cav | | | | 1 | |
| Do | Bonloc | Hdqrs. 3d Brig., 2d Div., 8th A. C., and scouts | | | 1 | | Capt. C. D. Clay, 17th Inf., A. A. G., wounded. |
| Do | Caloocan | 22d Inf.; 20th Kans.; Hospital Corps | | 2 | 2 | 27 | Capt. A. G. Clark, 20th Kans., and Lieut. H. L. Jackson, 22d Inf., wounded. |
| Do | La Loma church | E, I, K, 4th Cav.; G, H, K, L, 3d Art.: A, Utah Art., 1st Mont | | 8 | 2 | 50 | 2d Lieut. W. S. Overton, 3d Art., and 2d Lieut. Myles Kelly, 1st Mont., wounded. |
| Do | Malabon | E, I, K, 4th Cav.; E, F, G, M, 3d Inf.; 22d Inf.; 1st Mont.; 2d Oreg.; Hosp. Corps. | | 11 | 2 | 56 | Capt. H. L. Wells and 1st Lieut. A. J. Brazee, 2d Oreg., wounded. |
| Do | Mariquina road | 4th Inf.; 13th Minn.; A, E, M, 1st Colo.; A, Utah Art. | 1 | | | 17 | Capt. J. S. Stewart, 1st Colo., killed. |
| Do | San Francisco del Monte | G, H, K, L, 3d Art.; D, 6th Art.; A, B, Utah Art.; 20th Kans.; 1st Nebr.; 10th Pa.; 1st S. Dak. | | 2 | 3 | 19 | Capt. Lee Forby, Capt. W. C. Taylor, 1st Lieut. J. A. Storch, 1st Nebr., wounded. |
| Mar. 26 | Caloocan | G, 13th Minn | | | | 1 | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1899. | | | | | | | |
| Mar. 26 | Malabon | A, 1st Idaho | | | | 1 | |
| Do | Melinto | G, H, K, L, 3d Art.; B, D, E, L, 23d Inf.; 22d Inf.; 2d Oreg. | 1 | 2 | | 13 | Col. H. C. Egbert, 22d Inf., killed. |
| Do | Meycauayan | E, I, K, 4th Cav.; D, 6th Art.; 20th Kans.; 1st Mont.; 1st Nebr.; 10th Pa.; 1st S. Dak. | 1 | 2 | 3 | 23 | 1st Lieut. M. G. Krayenbuhl, 3d Art., killed; Brig. Gen. Irving Hale, U. S. V., Maj. Surg. F. J. Adams, 1st Mont., and Capt. C. H. Englesby, 1st S. Dak., wounded. |
| Do | Pasig | 1st Wash.; A, Utah Art | 1 | 1 | | 6 | Capt. G. H. Fortson, 1st Wash., killed. |
| Mar. 27 | Marilao River | E, I, K, 4th Cav.; G, H, K, L, 3d Art.; D, 6th Art.; A, B, Utah Art.; H, 1st Colo.; 22d Inf.; 20th Kans.; 1st Mont.; 1st Nebr.; 10th Pa. | | 5 | 2 | 38 | Capt. C. W. Jens, 10th Pa., and 2d Lieut. L. England, 3d Art., wounded. |
| Mar. 28 | Marilao | 1st Nebr., 10th Pa., 1st S. Dak | 3 | 6 | 1 | 24 | 1st Lieut. J. H. Lien, 1st Lieut. F. H. Adams, and 2d Lieut. S. E. Morrison, 1st S. Dak., killed; Lieut. P. D. McClelland, 1st S. Dak., wounded. |
| Mar. 29 | Guiguinto | E, I, K, 4th Cav.; G, H, L, 3d Art.; D, 6th Art.; B, Utah Art.; 22d Inf.; 20th Kans.; 1st Mont.; 1st Nebr.; 1st Colo. | | 5 | 3 | 55 | Maj. W. S. Metcalf, Capt. W. J. Watson, 20th Kans., and 1st Lieut. F. L. Perry, 1st Colo., wounded. |
| Do | Melinto | 2d Oreg., 10th Pa., 1st S. Dak | | 2 | 2 | 25 | Col. A. L. Hawkins and 1st Lieut. Blaine Aiken, 10th Pa., wounded. |
| Mar. 30 | Malolos | E, I, K, 4th Cav.; G, H, K, L, 3d Art.; D, 6th Art.; Utah Art.; B, 3d Inf.; 22d Inf.; 23d Inf.; 20th Kans.; 1st Mont.; 1st Nebr.; 10th Pa.; 1st S. Dak. | | 4 | | 25 | |
| Do | Mariquina road | E, 1st Colo | | | | 1 | |
| Mar. 31 | Malolos | E, I, K, 4th Cav.; G, H, K, L, 3d Art.; D, 6th Art.; Utah Art.; 3d Inf.; A, B, F, G, H, I, K, M, 22d Inf.; 23d Inf.; 20th Kans.; 1st Mont.; 1st Nebr.; 10th Pa.; 1st S. Dak. | | 1 | 1 | 18 | 2d Lieut. C. B. Humphrey, 3d Inf., wounded. |
| Do | Mariquina Valley | Utah Art.; 4th Inf.; C, D, E, L, 23d Inf.; C, D, E, G, 1st Colo. | 1 | | | 17 | 1st Lieut. J. C. Gregg, 4th Inf., killed. |
| Do | Taytay | A, Utah Art | | | | | |
| Apr. 1 | Melinto | C, G, K, 2d Oreg | | | | | |
| Do | San Nicolas | A, D, 1st N. Dak | | | 1 | 2 | 2d Lieut. D. Baldwin, jr., 1st N. Dak., wounded. |
| Apr. 4 | Calumpit | 1st Mont | | | | | |
| Do | Near Malolos | do | | 1 | | 3 | |
| Apr. 7 | Santa Maria | L, 2d Oreg.; B, Utah Art | | | | | |
| Apr. 9 | Malolos | 20th Kans | | | | | |
| Do | Santa Cruz | C, G, L, 4th Cav.; D, 6th Art.; A, C, D, E, G, I, K, L, 14th Inf.; A, C, D, F, 1st Idaho; C, D, I, K, 1st N. Dak.; det. 1st Wash. | | | 1 | 4 | 1st Lieut. E. E. Southern, 1st Wash., wounded |
| Do | Taguig | D, H, 1st Wash | | | | 1 | |
| Apr. 10 | Binan | Hospital Corps | | | | 1 | |
| Do | Guiguinto | 13th Minn | | 1 | | 1 | |
| Do | Paete | C, G, L, 4th Cav.; D, 6th Art.; A, C, D, E, G, I, K, L, 14th Inf.; C, D, I, K, 1st N. Dak.; dets. 1st Idaho and 1st Wash. | | | | | |
| Do | Santa Cruz | C, G, L, 4th Cav.; 14th Inf | | | 1 | 3 | 2d Lieut. LeRoy Eltinge, 4th Cav., wounded. |
| Apr. 11 | Guiguinto | 13th Minn | | 1 | 1 | 10 | 1st Lieut. C. N. Clark, 13th Minn., wounded. |
| Do | Marilao | A, L, M, 2d Oreg | | 3 | | 2 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do... | Pagsajan | C, D, G, I, K, 1st N. Dak.; B, Utah Art | | | | | |
| Do... | San Pedro Macati | H, 1st N. Dak | | | | 1 | |
| Do... | Santa Cruz | 14th Inf | | | | 3 | |
| Apr. 12 | Paete | C, D, I, K, 1st N. Dak | | 5 | | 2 | |
| Do... | Santa Maria | 13th Minn.; A, B, C, D, E, F, I, K, L, 2d Oreg | | | | 1 | |
| Apr. 13 | Malolos | G, H, K, L, 3d Art.; B, 1st Mont | | 2 | 1 | 5 | 2d Lieut. C. H. Lanza, 3d Art., wounded. |
| Apr. 15 | Marilao | 2d Oreg | | | 1 | | 2d Lieut. J. A. Young, 2d Oreg., wounded. |
| Apr. 20 | Guiguinto | A, 13th Minn.; D, H, 1st Wash | | | | 4 | |
| Apr. 21 | Near Guiguinto | F, 13th Minn | | | | 1 | |
| Apr. 22 | Novaliches | C, G, L, 4th Cav.; D, 6th Art.; Utah Art.; A, C, F, G, H, K, L, M, 3d Inf.; 22d Inf.; 1st N. Dak. | | | | 1 | |
| Do... | San Bartolome | 1st N. Dak | | | | | |
| Apr. 23 | Quingua | I, K, 4th Cav.; D, E, G, I, K, L, 51st Iowa; 1st Nebr | 2 | 5 | 2 | 43 | Col. J. M. Stotsenburg and 2d Lieut. L. E. Sisson, 1st Nebr., killed; 1st Lieut. A. S. Wadsworth and 1st Lieut. W. K. Moore, 1st Nebr., wounded. |
| Apr. 24 | Bagbag River | 20th Kans.; 1st Mont.; 1st Nebr.; Hosp. Corps | | 1 | | | |
| Do... | Lagundi | 20th Kans.; 1st Mont.; 1st. Nebr.; 1st S. Dak | | | | 1 | |
| Do... | Norzagaray | I, 4th Cav.; B, Utah Art.; C, D, E, G, H, K, L, M, 13th Minn.; A, B, F, G, I, K, L, 2d Oreg. | | | | 3 | |
| Do... | Pulilan | E, K, 4th Cav.; A, Utah Art.; 51st Iowa; 1st Nebr.; 1st S. Dak | | 5 | 3 | 12 | Maj. W. J. Duggan, 51st Iowa, Capt. E. A. Wedgwood, Utah Art., and 2d Lieut. W. G. Duncan, 1st Nebr., wounded. |
| Apr. 25 | Angat | B, Utah Art.; 1st N. Dak.; C, D, E, G, H, K, L, M, 13th Minn.; A, B, C, D, E, G, I, K, L, M, 2d Oreg. | | | | 1 | |
| Do... | Bagbag River | A, B, Utah Art.; 20th Kans.; 1st Mont | | | | 5 | |
| Do... | Calumpit | E, K, 4th Cav.; D, 6th Art.; B, Utah Art.; 51st Iowa; 1st Nebr.; 1st S. Dak.; Hosp. Corps. | | 5 | 2 | 32 | Maj. F. D. Eager, 1st Nebr., and 2d Lieut. W. S. Doolittle, 1st S. Dak., wounded. |
| Do... | Norzagaray | I, 4th Cav.; B, Utah Art.; C, D, E, G, H, K, L, M, 13th Minn.; A, B, F, G, I, K, L, 2d Oreg. | | | 1 | 1 | Maj. Surg. W. H. Ellis, 2d Oreg., wounded. |
| Apr. 26 | Angat | 13th Minn.; 1st N. Dak.; B, F, K, M, 2d Oreg | | | | | |
| Do... | Near Calumpit | A, B, Utah Art.; 20th Kans.; 1st Mont.; Hosp. Corps | | 4 | 1 | 10 | 2d Lieut. C. H. Ball, 20th Kans., wounded. |
| Do... | Calumpit | 1st Nebr | | | | 1 | |
| Apr. 27 | Apalit | A, B, Utah Art.; 20th Kans.; 1st Mont | | 1 | 3 | 10 | Maj. J. R. Miller, Capt. Andrew Jensen, 1st Mont., and Capt. W. H. Bishop, 20th Kans., wounded. |
| Do... | Marunco | Det. 13th Minn | | | | | |
| Do... | Pampanga River | A, Utah Art | | | | 1 | |
| Do... | Taguig | D, F, G, H, L, 1st Wash | | 2 | 1 | 14 | 1st Lieut. C. A. Booker, 1st Wash., wounded. |
| Apr. 29 | San Rafael | C, G, L, 4th Cav.; D, 6th Art.; A, B, Utah Art.; A, C, F, G, H, K, L, M, 3d Inf.; C, D, E, G, H, K, L, M, 13th Minn.; A, B, F, G, I, K, L, 2d Oreg.; 1st N. Dak. | | | 1 | 3 | 2d Lieut. C. C. Todd, 3d Inf., wounded. |
| May 1 | .....co | C, G, I, L, 4th Cav.; D, 6th Art.; B, Utah Art.; A, C, F, G, H, K, L, M, 3d Inf.; C, D, E, G, H, K, L, M, 13th Minn.; A, B, C, F, G, I, K, L, M, 2d Oreg.; 1st N. Dak.; 22d Inf. | | 1 | | 4 | |
| May 2 | Baliuag | C, G, I, L, 4th Cav.; G, H, K, L, 3d Art.; D, 6th Art.; B, Utah Art.; A, C, F, G, H, K, L, M, 3d Inf.; 22d Inf.; 13th Minn.; 1st N. Dak.; A, B, F, G, I, K, L, 2d Oreg. | | | | 2 | |
| Do... | Bustos | D, 6th Art.; 22d Inf.; 1st N. Dak.; A, B, F, G, H, I, K, L, 2d Oreg. | | | | 1 | |
| Do... | Pulilan | E, 4th Cav | | | | 1 | |

*K.—Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1899. | | | | | | | |
| May 4 | Maasin | C, G, I, L, 4th Cav.; G, H, K, L, 3d Art.; D, 6th Art.; Utah Art.; A, C, F, G, H, K, L, M, 3d Inf.; C, D, E, G, H, K, L, 13th Minn.; 2d Oreg. | | | 1 | 2 | Capt. H. L. Heath, 2d Oreg., wounded. |
| Do | Santo Tomas | G, H, K, L, 3d Art.; B, Utah Art.; 51st Iowa; 20th Kans.; 1st Mont.; 1st Nebr.; 1st S. Dak. | 1 | 4 | 3 | 22 | 2d Lieut. W. A. Taggart, 20th Kans., killed. Col. F. Funston, Capt. W. S. Albright, 20th Kans., and Capt. T. S. Dillon, 1st Mont., wounded. |
| May 5 | San Fernando | 51st Iowa | | | | 1 | |
| Do | San Miguel | A, B, I, L, 2d Oreg | | | | | |
| May 8 | Maasin | K, 13th Minn | | | 1 | | Maj. A. M. Diggles, 13th Minn., wounded. |
| Do | San Fernando | B, C, D, H, I, M, 20th Kans.; 1st Mont | | | | 1 | |
| Do | San Ildefonso | K, 13th Minn.; F, 2d Oreg | | | | 1 | |
| May 10 | Santa Cruz | A, Utah Art | | | | | |
| May 12 | San Ildefonso | H, 13th Minn.; F, G, K, 2d Oreg.; 1st N. Dak | | | | 1 | |
| May 13 | San Miguel | H, 13th Minn.; A, B, F, G, I, K, L, 2d Oreg | | | | 1 | |
| May 14 | Mariquina Road | E, 21st Inf | | | | 1 | |
| Do | San Luis | A, B, Utah Art | | 1 | | | |
| May 15 | Salacot | 13th Minn.; C, D, E, G, H, K, L, M, 2d Oreg | | | | 1 | |
| May 16 | Near San Isidro | C, D, E, G, H, K, L, M, 2d Oreg | | 1 | | | |
| May 17 | San Isidro | C, G, I, L, 4th Cav.; D, 6th Art.; B, Utah Art.; A, C, F, G, H, K, L, M, 3d Inf.; A, B, C, F, H, I, K, L, 22d Inf.; C, D, E, G, H, K, L, M, 13th Minn.; A, B, F, G, I, K, L, 2d Oreg.; 1st N. Dak. | | | | 2 | |
| Do | San Luis | E, 1st Art.; G, 3d Art.; A, D, H, I, 9th Inf; 17th Inf | | | | 1 | |
| May 18 | Cabiao | 1st N. Dak | | | | | |
| Do | San Fernando | D, 6th Art.; 1st N. Dak.; A, B, C, F, H, I, K, L, 22d Inf | | | | 5 | |
| May 19 | Cabiao | A, B, C, F, H, I, K, L, 22d Inf | | | | | |
| Do | Near Taguig | A, D, F, H, I, 1st Wash | | | | | |
| May 20 | San Antonio | 13th Minn.; det. 2d Oreg | | | | | |
| Do | Cavite | D, Cal. Art | | | | 1 | |
| May 21 | Angat | 13th Minn | | | | | |
| May 22 | San Pedro Macati | G, 1st Idaho | | 1 | | | |
| May 23 | Maasin | A, C, E, F, G, H, I, K, L, M, 3d Inf | | | | | |
| Do | Mariquina | C, 1st Colo | | 1 | | | |
| Do | San Fernando | E, 4th Cav.; B, Utah Art | | | | | |
| Do | San Ildefonso | A, C, E, F, G, H, I, K, L, M, 3d Inf | | 2 | 1 | 13 | 1st Lieut. J. C. McArthur, 3d Inf., wounded. |
| Do | Santa Rita | E, K, 4th Cav.; A, Utah Art | | | | 3 | |
| May 24 | San Fernando | G, H, K, L, 3d Art.; B, Utah Art.; A, B, E, G, K, L, M, 20th Kans.; 1st Mont. | | 1 | 1 | 10 | 2d Lieut. R. S. Parker, 20th Kans., wounded. |
| May 25 | do | A, B, Utah Art.; 17th Inf.; 51st Iowa; 20th Kans.; 1st S. Dak. | | 1 | | 7 | |
| Do | Santa Rita | D, H, I, 20th Kans.; 1st Mont | | | | 2 | |
| May 26 | Near Baliuag | C, 3d Inf | | | | 1 | |
| Do | San Fernando | 51st Iowa; 1st S. Dak.; B, F, L, 20th Kans | | | | | Capt. G. H. Tilly, U. S. V. Sig. Corps, killed. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| May 29 | Sagay | M, 18th Inf | | | | | |
| May 31 | San Fernando | 51st Iowa | | | | 3 | |
| June 3 | Antipolo | C, G, I, L, 4th Cav | | 2 | | 4 | |
| Do | Cainta | A, Utah Art.; E, G, 9th Inf.; E, G, H, I, 12th Inf.; A, B, C, D, G, I, K, L, M, 1st Wash.; 1st N. Dak. | | | | | |
| Do | Mariquina | 4th Inf.; 2d Oreg.; A, C, F, G, K, L, 1st Colo | | 1 | | 5 | |
| Do | Morong | E, 1st Art.; E, G, H, 9th Inf | | | | | |
| Do | Pumping station | C, G, I, L, 4th Cav.; 2d Oreg | | | | | |
| Do | San Fernando | C, 1st Mont | | | | 1 | |
| Do | Taytay | 1st N. Dak.; E, G, H, 9th Inf.; E, G, H, I, 12th Inf.; A, B, C, D, G, I, K, L, M, 1st Wash. | | 2 | | | |
| June 4 | Antipolo | E, G, H, 9th Inf.; A, C, F, G, K, L, 1st Colo.; 2d Oreg | | | | 1 | |
| Do | Morong | E, 1st Art.; A, Utah Art.; E, G, H, 9th Inf.; A, B, C, D, G, I, K, L, M, 1st Wash.; 2d Oreg. | | | | | |
| Do | Near Pasay | A, E, 4th Inf | | | | 1 | |
| June 5 | Morong | A, B, C, D, G, I, K, L, M, 1st Wash | | 1 | | | |
| June 6 | Near Morong | do | | | | 1 | |
| Do | Near Pasay | 1st Idaho | | | | 1 | |
| June 9 | Guadalupe | B, D, E, F, I, M, 1st Colo | | | | | |
| Do | Morong | H, 1st N. Dak | | 1 | | | |
| June 10 | Bacolor | D, L, 1st Mont | | | | 2 | |
| Do | Guadalupe | B, C, D, E, I, K, L, M, 9th Inf.; 13th Inf.; A, D, E, F, G, I, K, L, M, 14th Inf.; B, D, E, F, I, M, 1st Colo. | | 1 | 1 | 17 | Lieut. Col. C. M. Moses, 1st Colo., wounded. |
| Do | Las Pinas | I, 4th Cav.; 9th Inf.; 12th Inf.; 14th Inf | | 1 | 1 | 10 | 1st Lieut. H. G. Learnard, 14th Inf., wounded. |
| Do | Paranaque | B, C, D, F, H, I, K, L, 21st Inf | | | | 8 | |
| June 13 | Bacoor | do | | 2 | 2 | 11 | Lieut. Patrick A. Connolly and Lieut. J. L. Donovan, 21st Inf., wounded. |
| Do | Zapote River | E, 1st Art.; D, 6th Art.; B, C, D, E, I, K, L, M, 9th Inf.; L, M, 12th Inf.; 14th Inf.; 21st Inf.; A, 51st Iowa. | | 8 | 3 | 34 | Lieut. J. P. Harbeson, 12th Inf.; Lieut. M. C. Keith, 23d Inf., and Lieut. H. S. Avery, 14th Inf., wounded. |
| June 15 | Rosario | A, D, Cal. Art | | | | | |
| June 16 | Morong | H, 1st N. Dak | | | | 1 | |
| Do | Novaleta | A, D, 1st Cav.; A, B, C, K, 10th Pa | | | | | |
| Do | San Fernando | A, B, Utah Art.; 17th Inf.; 51st Iowa; 20th Kans.; 1st Mont. | | 1 | | 13 | |
| June 19 | Dasmariñas | 4th Inf | | 2 | | 16 | |
| Do | Imus | do | | 2 | | 5 | |
| June 20 | Dasmariñas | 4th Inf.; det. 9th Inf.; A, D, E, F, I, L, 14th Inf | | | | 2 | |
| June 21 | Bacoor | A, B, C, K, 10th Pa | | | | | |
| June 22 | San Fernando | A, Utah Art.; H, 9th Inf.; 17th Inf.; 20th Kans | | | | 2 | |
| June 26 | Muntinlupa | C, G, L, 4th Cav | | 1 | | | |
| June 30 | San Fernando | 17th Inf.; 51st Iowa; F, 12th Inf | | 1 | | 3 | |
| July 1 | Bulong | Det. E, 1st Cal | | 1 | | 1 | |
| July 4 | San Fernando | 17th Inf.; 51st Iowa | | | | 1 | |
| July 5 | Pililla | C, G, L, 4th Cav | | | | 1 | |
| July 11 | Near Muntinlupa | do | | | | 2 | |
| Do | San Fernando | 17th Inf | | | 1 | | 1st Lieut. I. L. Reeves, 17th Inf., wounded. |
| July 12 | Near Baliuag | K, 4th Cav | | | | | |
| Do | Teresa | 21st Inf | | | | | |
| July 17 | Mavitac | C, 21st Inf | | | | 1 | |
| July 19 | Bonbong | Dets. H, K, M, 6th Inf | | 1 | | 1 | |
| Do | Canlaon | Det. 6th Inf | | | | | |
| Do | Near San Luis | K, 9th Inf | | 1 | | | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1899. | | | | | | | |
| July 20 | Near Tolon | F, G, 6th Inf | | | | | |
| July 24 | Acan | Det. K, 23d Inf | | 1 | | | |
| July 26 | Calamba | C, G, L, 4th Cav.; C, D, E, H, I, K, 21st Inf.; C, D, F, H, I, K, 1st Wash.; E, 1st Art. | | 4 | | 12 | |
| July 27 | ....do | ....do | | | | 3 | |
| Do... | Valdez | E, 6th Inf | | | | | |
| Do... | Bacolor | L, 3d Art | | | | 1 | |
| July 28 | Near Baliuag | K, 4th Cav | | | | | |
| Do... | Calamba | C, G, L, 4th Cav.; C, D, E, H, I, K, 21st Inf.; C, D, F, H, I, K, 1st Wash.; E, 1st Art. | | | | | |
| July 29 | ....do | ....do | | | | | |
| July 30 | ....do | ....do | | 2 | 1 | 5 | 2d Lieut. J. M. Love, jr., 21st Inf., wounded. |
| Do... | Silay | Det. K, 6th Inf | | 2 | | | |
| Aug. 9 | Bacolor | 36th Inf | | 2 | 2 | 5 | Maj. J. Q. A. Braden and Capt. R. S. Abernethy, 36th Inf., wounded. |
| Do... | Calulut | G, 3d Art.; E, 1st Art.; 17th Inf.; B, C, H, L, 22d Inf.; A, B, C, D, E, G, H, I, L, M, 51st Iowa. | | 1 | 1 | 17 | 2d Lieut. L. A. Williams, 51st Iowa, wounded. |
| Do... | Sindalon | 9th Inf.; 12th Inf | | 3 | | 9 | |
| Do... | Near Calulut | Det. 51st Iowa | | | | | |
| Aug. 10 | Porac | A, B, D, F, 12th Inf | | | | | |
| Do... | Near Angeles | C, E, F, M, 17th Inf.; E, 1st Art | | | | 1 | |
| Do... | Santa Rita | C, D, G, H, 36th Inf | | | | | |
| Aug. 11 | Near Angeles | Det. 51st Iowa | | | | 1 | |
| Do... | Near Novaleta | Det. 4th Inf | | 1 | | | |
| Aug. 12 | San Luis | D, M, 22d Inf | | 1 | | 1 | |
| Do... | Santa Rita | B, C, E, I, 9th Inf | | | | 2 | |
| Do... | San Mateo | A, B, F, 4th Cav.; B, E, G, L, 21st Inf.; E, G, 24th Inf.; F, H, L, 25th Inf. | | 4 | 1 | 18 | 2d Lieut. M. M. Weeks, 21st Inf., wounded. |
| Aug. 13 | Near Angeles | A, B, G, I, 17th Inf.; E, 1st Art | | | | 1 | |
| Do... | Near Quingua | B, D, 3d Inf | | | | 1 | |
| Aug. 14 | ....do | K, 4th Cav.; G, 3d Art.; C, E, F, G, 3d Inf | | 1 | | | |
| Aug. 15 | Near La Paz | E, F, G, I, 1st Tenn | | | | | |
| Do... | Near Bacolor | Dets. A, K, L, M, 36th Inf | | | | | |
| Aug. 16 | Guagua | E, and dets. A, K, L, M, 36th Inf | | | | | |
| Do... | Dolores | K, 12th Inf | | | | 1 | |
| Do... | Angeles | E, 1st Art.; B, C, D, E, F, G, H, I, L, M, 12th Inf | | 3 | 1 | 13 | 1st Lieut. W. H. Williams, 12th Inf., wounded. |
| Aug. 17 | Near Porac | Det. 4th Cav | | | | | |
| Do... | Angeles | E, 1st Art.; B, 12th Inf | | | | 2 | |
| Aug. 18 | ....do | E, 1st Art.; det. 12th Inf.; B, Engrs | | | | 2 | |
| | | | | | | 3 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do... | Near Angeles | E, 1st Art.; E, G, H, I, 12th Inf | 1 | | 1 | | 1st Lieut. A. W. Drew, 12th Inf., killed; 1st Lieut. W. Uline, 12th Inf., wounded. |
| Aug. 23 | El Pardo | Det. M, 23d Inf | | | 1 | | 1st Lieut. H. S. Howland, 23d Inf., wounded. |
| Aug. 25 | Near Cebu | 4 men, Co. M, 23d Inf | | 3 | | 1 | |
| Aug. 30 | Argogula | H, and det. K, 6th Inf | | | | | |
| Sept. 1 | Dolores | D, E, 17th Inf | | | | | |
| Sept. 8 | Near Porac | Det. A, 36th Inf | | 1 | | 1 | |
| Sept. 9 | Near Imus | F, 5th Art | | | | | |
| Do... | Near Porac | 36th Inf | | | | | |
| Do... | Near Arayat | C, F, 17th Inf | | | | | |
| Sept. 11 | Near Calulut | B, I, 17th Inf | | | | | |
| Sept. 13 | Acan Valley | K, 23d Inf | | | | | |
| Sept. 15 | Near Calamba | Det. E, 21st Inf | | | | | |
| Do... | Guagua | Det. L, 36th Inf | | | | | |
| Do... | Near La Paz | E, F, 1st Tenn | | 1 | | | |
| Sept. 16 | Isabela | L, 6th Inf | | | | 1 | |
| Sept. 17 | Near Moalboal | Dets. A, C, 6th Inf.; A, 23d Inf.; H, 1st Tenn | | 2 | | 2 | |
| Sept. 19 | Casalbos | Det. F, 17th Inf | | | | | |
| Sept. 22 | Near Cebu | G, 6th Art.; Dets. A, C, 6th Inf.; H, I, K, M, 19th Inf.; Dets. A, I, K, 23d Inf.; B, D, E, F, G, I, L, M, 1st Tenn. | | 1 | | 4 | |
| Do... | Gondos | G, M, 17th Inf | | | | | |
| Sept. 23 | Near Angeles | Lowe's Scouts; Hosp. Corps; employees Q. M. Dept | | 1 | 1 | 4 | Capt. A. W. Perry (9th Cav.), A. Q. M. Vols., wounded. |
| Do... | Near Cebu | K, 23d Inf | | | | | |
| Sept. 27 | Near Mexico | Dets. F, K, 24th Inf | | | | | |
| Sept. 28 | Porac | E, 4th Cav.; K, 3d Art.; 9th Inf.; 36th Inf | | | | 8 | |
| Do... | Near Porac | A, H, K, L, 17th Inf | | | | | |
| Sept. 29 | Near Imus | B, D, K, L, 4th Inf.; F, 5th Art | | | | 4 | |
| Do... | Near Los Banos | A, 21st Inf | | | | 1 | |
| Sept. 30 | Imus | 4th Inf | | | | | |
| Oct. 1 | Near Tabuan | Det. 6th Inf.; Hosp. Corps | 1 | | 1 | 3 | Lieut. Haydon Y. Grubbs, 6th Inf., killed; Capt. P. Shillock, asst. surg., wounded. |
| Do... | Near Arayat | I, G, 22d Inf | | | | | |
| Oct. 2 | Near Imus | F, 5th Art.; E, Sig. Corps; B, E, H, 14th Inf.; A, D, I, 4th Inf | 1 | 2 | | 7 | Capt. B. Eldridge, 14th Inf., killed. |
| Oct. 3 | .....do | F, 5th Art.; B, K, G, 4th Inf.; E, H, I, 14th Inf | | | 1 | 1 | Lieut. L. R. Burgess, 5th Art., wounded. |
| Do... | Near Santa Ana | B, 4th Cav | | | | | |
| Do... | Calamba | F, 5th Art.; B, D, K, L, 21st Inf | | 2 | | 7 | |
| Do... | Near Santa Cruz | Det. A, 4th Cav | | 1 | | | |
| Do... | Near Calulut | Dets. E, M, 17th Inf | | | | | |
| Do... | Guagua | 9th Inf | | 2 | | | |
| Oct. 4 | Arayat | E, F, K, 22d Inf | | | | 1 | |
| Oct. 5 | Binacayan | B, C, D, E, H, K, L, 4th Inf | | | | 1 | |
| Oct. 6 | .....do | F, 5th Art.; B, C, D, E, H, K, L, 4th Inf.; H, 14th Inf | | | | 1 | |
| Do... | Imus | F, 5th Art.; A, E, F, G, 4th Inf | | | | 2 | |
| Do... | Polo | K, 16th Inf | | | | | |
| Do... | Santa Ana | K, 24th Inf | | | | | |
| Oct. 7 | Sagajon River | Det. B, 6th Inf | | | | | |
| Do... | St. Augustin | A, F, K, 24th Inf | | | | 2 | |
| Oct. 8 | Near San Nicolas | A, E, F, G, 4th Inf.; Hosp. Corps | | | | 3 | |
| Do... | Novaleta | F, 5th Art.; G, 4th Cav.; E, G, 14th Inf.; 13th Inf | 1 | | 1 | 10 | Capt. M. B. Saffold, 13th Inf., killed; Capt. H. J. McGrath, 4th Cav., wounded. |
| Do... | Near San Mateo | Det. L, 14th Inf | | | | 1 | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. |  | Wounded. |  | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
|  |  |  | Officers. | Men. | Officers. | Men. |  |
| 1899. |  |  |  |  |  |  |  |
| Oct. 8 | La Loma | 1 man, F, 4th Art. (resisting capture by insurgents) |  | 1 |  |  |  |
| Oct. 9 | Florida Blanca | Det. 36th Inf |  |  |  |  |  |
| Do | Near San Mateo | L, 14th Inf.; Det. F, 19th Inf |  |  |  |  |  |
| Do | Meycauayan | Det. D, 16th Inf |  |  |  |  |  |
| Do | Near Caloocan | Band, A, 16th Inf |  |  |  |  |  |
| Do | La Loma | F, 4th Art.; 25th Inf |  |  |  | 1 |  |
| Oct. 10 | San Mateo | L, 14th Inf |  |  |  |  |  |
| Do | Near San Franciso de Malabon. | F, 5th Art.; 13th Inf |  |  | 1 | 2 | Capt. W. Geary, 13th Inf., **wounded.** |
| Do | Santa Cruz | A, Engineers |  |  |  | 1 |  |
| Oct. 11 | Angeles | 9th Inf., 12th Inf., 17th Inf |  |  |  | 5 |  |
| Oct. 12 | Near Muntinlupa | A, B, D, 37th Inf.; Hosp. Corps |  | 3 |  | 2 |  |
| Do | Arayat | B, C, F, 4th Cav.; A, C, E, F, G, H, I, K, 24th Inf.; G, H, 37th Inf. |  |  |  | 2 |  |
| Do | Bagbag Bridge | H, 16th Inf |  |  |  |  |  |
| Oct. 13 | Angeles | 9th Inf |  |  |  | 1 |  |
| Do | Near San Roque | C, D, H, 4th Cav |  |  |  | 2 |  |
| Oct. 15 | Near Guiguinto | Dets. F, I, 16th Inf |  |  |  |  |  |
| Oct. 16 | Angeles | 9th Inf.; 12th Inf.; 17th Inf.; Hosp. Corps |  | 1 | 1 | 8 | A. A. Surg. H. E. Stafford, **wounded.** |
| Oct. 17 | Near Dolores | 36th Inf |  | 1 |  | 1 |  |
| Do | Marilao Bridge | Det. D, 16th Inf |  |  |  |  |  |
| Oct. 18 | Near Guiguinto | F, 16th Inf |  |  |  | 2 |  |
| Oct. 19 | Baog | Det. L, 6th Inf |  |  |  |  |  |
| Do | Lulas Mountains | I, K, 19th Inf |  |  |  |  |  |
| Do | Jaro | Det. M, 18th Inf |  |  |  |  |  |
| Do | San Isidro | A, B, F, 4th Cav.; A, F, I, K, 22d Inf.; G, H, 37th Inf.; Hosp. Corps. |  | 1 |  | 4 |  |
| Do | Cabiao | L, 4th Cav |  |  |  |  |  |
| Oct. 20 | Calamba | F, 5th Art.; 21st Inf.; A, B, D, 37th Inf |  |  |  |  |  |
| Oct. 21 | Near Isabela | Det. L, 6th Inf |  |  |  |  |  |
| Do | Near San Carlos | Det. I, 6th Inf |  |  |  |  |  |
| Oct. 22 | Rio Grande River | Scouts, 34th Inf., Q. M. Dept | 1 |  |  |  | Maj. Guy Howard, Q. M. V., **killed.** |
| Do | Near Castellana | K, 6th Inf |  |  |  |  |  |
| Do | Near Lubao | Scouts, 36th Inf |  |  |  |  |  |
| Oct. 23 | Calamba | F, 5th Art.; B, D, I, 21st Inf.; A, B, C, 37th Inf |  | 1 |  | 4 |  |
| Do | Santa Rosa | B, 4th Cav |  |  |  |  |  |
| Oct. 25 | Sudlon Mountain | H, I, K, 9th Inf |  |  |  | 2 |  |
| Do | Near Calatrava | Det. I, 6th Inf |  |  |  |  |  |
| Oct. 27 | Toboatin River | A, F, I, K, 22d Inf.; G, H, 37th Inf.; Lowe's Scouts |  | 2 |  | 1 |  |
| Do | Hacienda Carmie | H, 6th Inf |  |  |  |  |  |
| Do | Near Isabela | Det. L, 6th Inf |  |  |  |  |  |
| Oct. 28 | Boves | K, 6th Inf |  |  |  |  |  |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Oct. 29 | Lubao | Det. 36th Inf.; Hosp. Corps | | 1 | 2 | 6 | Capt. C. French and Lieut. A. M. Ferguson, 36th Inf., wounded. |
| Nov. 2 | Near Aliaga | Macabebe Scouts | 1 | | | | 2d Lieut. H. M. Boutelle, 3d Art., killed. |
| Do. | Near Lubao | C, D, G, H, 36th Inf | | | | | |
| Do. | Porac | E, K, 4th Cav.; A, B, E, F, I, K, L, M, 36th Inf | | 1 | | 2 | |
| Do. | Near Aliaga | H, M, 4th Cav | | | | 1 | |
| Nov. 3 | Near Talavera | L, 4th Cav | | | | | |
| Do. | Near Porac | Det. 36th Inf | | | 1 | | Lieut. Col. W. R. Grove, 36th Inf., wounded. |
| Nov. 4 | do | do | | | | | |
| Nov. 5 | Magalang | E, 1st Art.; K, 3d Art.; A, Engrs.; E, K, 4th Cav.; 17th Inf.; 32d Inf.; Hosp. Corps. | | | 1 | 10 | A. A. Surg. R. A. Edmonston, wounded. |
| Do. | Cabanatuan | E, 4th Cav.; Lowe's Scouts | | | | | |
| Nov. 6 | Near Magalang | K, 4th Cav | | | | 1 | |
| Nov. 7 | Mabalacat | E, K, 4th Cav.; E, 1st Art.; K, 3d Art., 36th Inf | | | | | |
| Do. | Talavera | A, D, L, 4th Cav | | | | | |
| Do. | San Fabian | 13th Inf., 33d Inf | | | | 1 | |
| Nov. 8 | Mabalacat | 4th Cav., 36th Inf | | | | | |
| Do. | San Jacinto | I, K, L, M, 13th Inf | | | | | |
| Nov. 9 | Near Bamban | Det. E, 4th Cav.; Det. 36th Inf | | | | | |
| Nov. 10 | San Isidro | G, 6th Art.; C, 26th Inf | | | | 1 | |
| Do. | Jibuan | A, B, C, D, E, F, G, H, 18th Inf | | | | 1 | |
| Do. | Masapinit | A, C, 17th Inf | | | | 3 | |
| Do. | Byoo | Det. D, 6th Inf | | | | | |
| Do. | Near San Fabian | Det. 33d Inf | | | | | |
| Nov. 11 | Humingan | F, 3d Cav | | | | | |
| Do. | Bamban | E, K, 4th Cav.; E, 1st Art.; A, Engrs.; 9th Inf.; 12th Inf.; 17th Inf.; 36th Inf. | 1 | | | 1 | 2d Lieut. J. L. Davis, 36th Inf., killed. |
| Do. | Iloilo | L, 26th Inf | | | | 1 | |
| Do. | Near San Mateo | Det. K, 16th Inf | | | | 1 | |
| Do. | Near Santa Rita | E, K, 4th Cav.; 17th Inf | | 2 | | 1 | |
| Do. | Tayug | C, M, 3d Cav | | | | | |
| Do. | San Jacinto | 33d Inf.; Hosp. Corps | 1 | 6 | 1 | 15 | Maj. J. A. Logan, 33d Inf., killed; Capt. J. F. Green, 33d Inf., wounded. |
| Nov. 12 | Near San Blas | A, C, 19th Inf | | | | | |
| Do. | Bongabong | D, 3d Cav | | | | | |
| Do. | Asingan | A, C, 3d Cav | | | | | |
| Nov. 13 | Near Tarlac | Det. E, 36th Inf | | | | | |
| Do. | Near San Nicolas | Det. M, 3d Cav | | | | 1 | |
| Do. | Calamba | F, 5th Art.; A, B, C, 37th Inf | | | | | |
| Nov. 14 | Near Alimodian | C, 19th Inf | | | | 1 | |
| Do. | Rabon River | 13th Inf | | | | 4 | |
| Do. | Near Mandoag | D, K, 3d Cav | | | | | |
| Do. | Near Calamba | F, 5th Art.; L, 21st Inf | | | | | |
| Nov. 15 | Pozorrubio | A, K, 3d Cav | | | | | |
| Nov. 17 | Valle Hermoso | Det. I, 6th Inf | | | | | |
| Do. | Near San Nicolas | C, E, L, 3d Cav | | | | | |
| Nov. 18 | O'Donnell | B, E, K, 25th Inf | | | | | |
| Do. | Jaro River | A, B, C, D, I, K, L, M, 26th Inf | | | | 1 | |
| Do. | Near Imus | C, I, F, 11th Cav.; F, 5th Art.; C, D, L, M, 4th Inf | | | | 7 | |
| Do. | Near Los Banos | H, 21st Inf | | 1 | | | |
| Nov. 19 | Near San Nicolas | A, K, 3d Cav | | 1 | | | |
| Do. | Near Santo Tomas | do | | | | 7 | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1899. | | | | | | | |
| Nov. 19 | Near Aringay | D, 3d Cav | | | | | |
| Nov. 20 | San Blas | G, 6th Art.; Det., 18th Inf.; F, H, 26th Inf.; A, B, C, D, E, F, G, L, 19th Inf. | | | | 4 | |
| Do | San Fernando de Union | D, 3d Cav | | | | | |
| Do | Near Imus | F, 5th Art.; Dets. B, H, I, K, 4th Inf | | | | 2 | |
| Nov. 21 | Balangtang | L, 6th Inf.; A, C, D, I, L, M, 26th Inf | | | | 6 | |
| Do | Near Illaya | G, 6th Art.; A, B, C, D, E, F, G, H, 18th Inf | | 4 | 2 | 19 | 2d Lieut. R. B. Calvert and 2d Lieut. C. M. Smith, 18th Inf., wounded. |
| Do | Obando | Det. K, 16th Inf | | | | | |
| Nov. 22 | Near San Mateo | Dets. A, C, K, 16th Inf.; Macabebe Scouts | | | | 8 | |
| Do | Santa Barbara | G, 6th Art.; A, B, C, D, E, F, G, H, 18th Inf | | | | | |
| Nov. 24 | Manichen | B, 35th Inf | | | | | |
| Do | Toboatin Bridge | E, 35th Inf | | 1 | | | |
| Do | Near San Mateo | I, L, 27th Inf | | | | 1 | |
| Do | San Ildefonso | G, 3d Art.; I, K, L, 3d Inf | 1 | | | 1 | 2d Lieut. Maxwell Keyes, 3d Inf., killed. |
| Do | Near Carranglan | Det. L, 4th Cav | | | | | |
| Nov. 25 | Imus | F, 5th Art.; 4th Inf | | | | 3 | |
| Do | Mangatarem | Det. 33d Inf | | | | | |
| Do | Banati | L, 6th Inf | | | | | |
| Nov. 26 | Barrio Bocola | Det. 32d Inf | | | | | |
| Do | Passi | G, 6th Art.; I, K, L, M, 18th Inf.; A, B, C, D, E, F, G, L, 19th Inf. | 1 | 1 | | | Capt. O. B. Warwick, 18th Inf., killed. |
| Nov. 27 | Near Tarlac | Det. G, 9th Inf | | | | | |
| Nov. 28 | Near Mangatarem | A, C, D, G, H, K, L, M, 36th Inf | | | | | |
| Do | Near Mabalacat | Macabebe Scouts | | | 1 | | 1st Lieut. M. A. Batson, 4th Cav., wounded. |
| Nov. 29 | Near San Miguel | Det. H, 35th Inf | | | | | |
| Nov. 30 | Near Carmen | F, 35th Inf | | | | | |
| Dec. 1 | Delcarmen | do | | | | 8 | |
| Dec. 2 | Tila Pass | E, F, G, H, 33d Inf | | 2 | | 9 | |
| Do | Barrio Santol | G, 32d Inf | | | | | |
| Dec. 3 | San Luis | Dets. A, F, H, K, 24th Inf | | | | 1 | |
| Do | Near Arayat | Det. I, 35th Inf | | | | 1 | |
| Dec. 4 | Tangadan Mountain | A, D, K, 3d Cav.; F, G, H, 34th Inf.; 100 men, 33d Inf | | 1 | | 12 | |
| Do | Imus River | D, 28th Inf | | | | 1 | |
| Do | Near Arayat | Dets. D, I, 35th Inf | | | | | |
| Do | San Ildefonso | G, H, L, 3d Art.; A, B, C, 3d Inf.; det. 16th Inf | | | | 4 | |
| Do | Vigan | Det. 33d Inf | | | | 3 | |
| Do | Dinalupijan | L, 3d Art.; E, F, G, H, 3d Inf.; D, G, 32d Inf | | 8 | | | |
| Dec. 5 | Near San Ildefonso | G, H, L, 3d Art.; A, B, C, 3d Inf.; det. 16th Inf | | | | | |
| Do | Orani | E, F, G, H, 3d Inf.; D, E, H, M, 32d Inf | | | | | |
| Do | Near San Miguel | L, 3d Art | | | | 1 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do. | Balanga | E, F, G, H, 3d Inf | | | | 1 | |
| Do. | Imus River | Det. C, 4th Inf | | | | | |
| Do. | Calamba | F, 5th Art.; A, B, C, 37th Inf | | | | | |
| Dec. 7 | Naguilan | A, F, H, 24th Inf | | | | 4 | |
| Do. | La Granja | Det. M, 6th Inf | 1 | | | 2 | 1st Lieut. A. C. Ledyard, 6th Inf., killed. |
| Do. | San Fernando de Rivera | F, H, I, M, 25th Inf | | | | 1 | |
| Dec. 8 | Olongapo | G, 32d Inf.; det. 3d Inf | | | | | |
| Do. | Botolan | F, H, I, M, 25th Inf | | | | 1 | |
| Do. | Dingras | F, G, H, 34th Inf | | | | | |
| Do. | Ginigaran | Det. D, 6th Inf | | | | 2 | |
| Dec. 9 | Iba | F, H, I, M, 25th Inf | | | | 1 | |
| Do. | Near Dingras | F, G, H, 34th Inf | | | | | |
| Dec. 10 | San Ildefonso | A, B, C, 3d Inf | | | | | |
| Do. | Sibul Trail | A, B, D, F, G, H, 4th Cav | | | | 2 | |
| Do. | Subig Bay | E, H, 3d Inf.; G, 32d Inf | | | | | |
| Do. | Solsona | F, G, H, 34th Inf | | | | 1 | |
| Dec. 11 | Near San Miguel | A, B, C, 3d Inf.; 35th Inf | | | | | |
| Do. | Near Biacao | A, B, D, F, G, H, 4th Cav | | | | | |
| Do. | San Ildefonso | G, H, L, 3d Art.; A, B, C, 3d Inf.; det. 16th Inf | | | | | |
| Do. | San Agustin | Det. I, 32d Inf | | | | | |
| Do. | Near Carranglan | E, 34th Inf | | | | | |
| Do. | Barrio Oranda | D, H, 6th Inf | | | | | |
| Dec. 12 | Castel Jose | 32d Inf. scouts | | | | | |
| Do. | Tuwedteelted Mountains | A, K, 3d Cav | | 2 | | 1 | |
| Do. | Near Biacao | A, B, D, F, G, H, 4th Cav | | | | | |
| Dec. 13 | Near Subig | Det. G, 32d Inf | | | | | |
| Do. | Near San Miguel | A, B, D, F, G, 4th Cav | | | | | |
| Dec. 16 | Romblon | C, D, 18th Inf | | 1 | | | |
| Do. | Mariveles | G, 32d Inf | | | | | |
| Do. | Barrio Cabog | Dets. D, K, 6th Inf | | | | 1 | |
| Do. | Near Dingras | F, G, H, 34th Inf.; det. 33d Inf | | | | | |
| Dec. 17 | Cabaruan | B, E, 17th Inf | | | 1 | | 2d Lieut. L. N. Bushfield, 17th Inf., wounded. |
| Do. | Morong | E, M, 32d Inf | | | | | |
| Dec. 18 | Cameva | F, 35th Inf | | | | | |
| Do. | Iba | I, 25th Inf | | | | 1 | |
| Do. | Capintalan | E, 34th Inf | | | | | |
| Dec. 19 | San Mateo | I, 4th Cav.; C, D, F, G, H, I, K, M, 11th Cav.; A, B, C, M, 27th Inf.; E, F, G, H, 29th Inf. | 1 | | 3 | 10 | Maj. Gen. H. W. Lawton, U. S. V., killed. Capt. O. T. Kenan, 29th Inft.; 1st. Lieut. W. V. Cotchett, 11th Cav.; and 2d Lieut. E. L. D. Breckinridge, 7th Inf. (A. D. C.), wounded. |
| Do. | do | A, 27th Inft. | | 1 | | | |
| Do. | Sual | Det. 36th Inf | | | | | |
| Do. | Hacienda Tongal | Det. D, 6th Inf | | | | | |
| Do. | Balanga | M, 32d Inf | | | | | |
| Do. | Samponong | Det. D, 26th Inf | | | | | |
| Dec. 20 | Cantapang | F, 17th Inf | | | | | |
| Do. | Balincaguing | 36th Inf | | | | | |
| Do. | Near Carranglan | B, 22d Inf | | 1 | | | |
| Dec. 21 | Near Alos | 36th Inf | | | 1 | | 1st Lieut. W. C. Read, 36th Inf., wounded. |
| Do. | Near Orani | G, 32d Inf | | | | | |
| Dec. 22 | Near Dinalupijan | D, 32d Inf | | | | 1 | |
| Do. | Sara | D, 26th Inf | | | | 1 | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. |  | Wounded. |  | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
|  |  |  | Officers. | Men. | Officers. | Men. |  |
| 1899. |  |  |  |  |  |  |  |
| Nov. 19 | Near Aringay | D, 3d Cav |  |  |  |  |  |
| Nov. 20 | San Blas | G, 6th Art.; Det., 18th Inf.; F, H, 26th Inf.; A, B, C, D, E, F, G, L, 19th Inf. |  |  |  | 4 |  |
| Do | San Fernando de Union | D, 3d Cav |  |  |  |  |  |
| Do | Near Imus | F, 5th Art.; Dets. B, H, I, K, 4th Inf |  |  |  | 2 |  |
| Nov. 21 | Balangtang | L, 6th Inf.; A, C, D, I, L, M, 26th Inf |  |  |  | 6 |  |
| Do | Near Illaya | G, 6th Art.; A, B, C, D, E, F, G, H, 18th Inf |  | 4 | 2 | 19 | 2d Lieut. R. B. Calvert and 2d Lieut. C. M. Smith, 18th Inf., wounded. |
| Do | Obando | Det. K, 16th Inf |  |  |  |  |  |
| Nov. 22 | Near San Mateo | Dets. A, C, K, 16th Inf.; Macabebe Scouts |  |  |  | 3 |  |
| Do | Santa Barbara | G, 6th Art.; A, B, C, D, E, F, G, H, 18th Inf |  |  |  |  |  |
| Nov. 24 | Manichen | B, 35th Inf |  |  |  |  |  |
| Do | Toboatin Bridge | E, 35th Inf |  | 1 |  |  |  |
| Do | Near San Mateo | I, L, 27th Inf |  |  |  | 1 |  |
| Do | San Ildefonso | G, 3d Art.; I, K, L, 3d Inf | 1 |  |  | 1 | 2d Lieut. Maxwell Keyes, 3d Inf., killed. |
| Do | Near Carranglan | Det. L, 4th Cav |  |  |  |  |  |
| Nov. 25 | Imus | F, 5th Art.; 4th Inf |  |  |  | 3 |  |
| Do | Mangatarem | Det. 33d Inf |  |  |  |  |  |
| Do | Banati | L, 6th Inf |  |  |  |  |  |
| Nov. 26 | Barrio Bocola | Det. 32d Inf |  |  |  |  |  |
| Do | Passi | G, 6th Art.; I, K, L, M, 18th Inf.; A, B, C, D, E, F, G, L, 19th Inf. | 1 | 1 |  |  | Capt. O. B. Warwick, 18th Inf., killed. |
| Nov. 27 | Near Tarlac | Det. G, 9th Inf |  |  |  |  |  |
| Nov. 28 | Near Mangatarem | A, C, D, G, H, K, L, M, 36th Inf. |  |  |  |  |  |
| Do | Near Mabalacat | Macabebe Scouts |  |  | 1 |  | 1st Lieut. M. A. Batson, 4th Cav., wounded. |
| Nov. 29 | Near San Miguel | Det. H, 35th Inf |  |  |  |  |  |
| Nov. 30 | Near Carmen | F, 35th Inf |  |  |  |  |  |
| Dec. 1 | Delcarmen | do |  |  |  | 3 |  |
| Dec. 2 | Tila Pass | E, F, G, H, 33d Inf |  | 2 |  | 9 |  |
| Do | Barrio Santol | G, 32d Inf |  |  |  |  |  |
| Dec. 3 | San Luis | Dets. A, F, H, K, 24th Inf |  |  |  | 1 |  |
| Do | Near Arayat | Det. I, 35th Inf |  |  |  | 1 |  |
| Dec. 4 | Tangadan Mountain | A, D, K, 3d Cav.; F, G, H, 34th Inf.; 100 men, 33d Inf |  | 1 |  | 12 |  |
| Do | Imus River | D, 28th Inf |  |  |  | 1 |  |
| Do | Near Arayat | Dets. D, I, 35th Inf |  |  |  |  |  |
| Do | San Ildefonso | G, H, L, 3d Art.; A, B, C, 3d Inf.; det. 16th Inf |  |  |  | 4 |  |
| Do | Vigan | Det. 33d Inf |  |  |  | 3 |  |
| Do | Dinalupijan | L, 3d Art.; E, F, G, H, 3d Inf.; D, G, 32d Inf |  | 8 |  |  |  |
| Dec. 5 | Near San Ildefonso | G, H, L, 3d Art.; A, B, C, 3d Inf.; det. 16th Inf |  |  |  |  |  |
| Do | Orani | E, F, G, H, 3d Inf.; D, E, H, M, 32d Inf |  |  |  |  |  |
| Do | Near San Miguel | L, 3d Art |  |  |  | 1 |  |
| Dec. 6 | Near San Felipe | A, 27th Inf |  |  |  |  |  |
|  |  | G, H, L, 3d Art.; A, B, C, 3d Inf.; det. 16th Inf |  |  |  |  |  |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do... | Balanga | E, F, G, H, 3d Inf | | | | | |
| Do... | Imus River | Det. C, 4th Inf | | | | 1 | |
| Do... | Calamba | F, 5th Art.; A, B, C, 37th Inf | | | | | |
| Dec. 7 | Naguilan | A, F, H, 24th Inf | | | | 4 | |
| Do... | La Granja | Det. M, 6th Inf | 1 | | | 2 | 1st Lieut. A. C. Ledyard, 6th Inf., killed. |
| Do... | San Fernando de Rivera | F, H, I, M, 25th Inf | | | | 1 | |
| Dec. 8 | Olongapo | G, 32d Inf.; det. 3d Inf | | | | | |
| Do... | Botolan | F, H, I, M, 25th Inf | | | | 1 | |
| Do... | Dingras | F, G, H, 34th Inf | | | | | |
| Do... | Ginigaran | Det. D, 6th Inf | | | | 2 | |
| Dec. 9 | Iba | F, H, I, M, 25th Inf | | | | 1 | |
| Do... | Near Dingras | F, G, H, 34th Inf | | | | | |
| Dec. 10 | San Ildefonso | A, B, C, 3d Inf | | | | | |
| Do... | Sibul Trail | A, B, D, F, G, H, 4th Cav | | | | 2 | |
| Do... | Subig Bay | E, H, 3d Inf.; G, 32d Inf | | | | | |
| Do... | Solsona | F, G, H, 34th Inf | | | | 1 | |
| Dec. 11 | Near San Miguel | A, B, C, 3d Inf.; 35th Inf | | | | | |
| Do... | Near Biacao | A, B, D, F, G, H, 4th Cav | | | | | |
| Do... | San Ildefonso | G, H, L, 3d Art.; A, B, C, 3d Inf.; det. 16th Inf | | | | | |
| Do... | San Agustin | Det. I, 32d Inf | | | | | |
| Do... | Near Carranglan | E, 34th Inf | | | | | |
| Do... | Barrio Oranda | D, H, 6th Inf | | | | | |
| Dec. 12 | Castel Jose | 32d Inf. scouts | | | | | |
| Do... | Tuwedteelted Mountains | A, K, 3d Cav | | 2 | | 1 | |
| Do... | Near Biacao | A, B, D, F, G, H, 4th Cav | | | | | |
| Dec. 13 | Near Subig | Det. G, 32d Inf | | | | | |
| Do... | Near San Miguel | A, B, D, F, G, 4th Cav | | | | | |
| Dec. 16 | Romblon | C, D, 18th Inf | | 1 | | | |
| Do... | Mariveles | G, 32d Inf | | | | | |
| Do... | Barrio Cabog | Dets. D, K, 6th Inf | | | | 1 | |
| Do... | Near Dingras | F, G, H, 34th Inf.; det. 33d Inf | | | | | |
| Dec. 17 | Cabaruan | B, E, 17th Inf | | | 1 | | 2d Lieut. L. N. Bushfield, 17th Inf., wounded. |
| Do... | Morong | E, M, 32d Inf | | | | | |
| Dec. 18 | Cameva | F, 35th Inf | | | | | |
| Do... | Iba | I, 25th Inf | | | | 1 | |
| Do... | Capintalan | E, 34th Inf | | | | | |
| Dec. 19 | San Mateo | I, 4th Cav.; C, D, F, G, H, I, K, M, 11th Cav.; A, B, C, M, 27th Inf.; E, F, G, H, 29th Inf. | 1 | | 3 | 10 | Maj. Gen. H. W. Lawton, U. S. V., killed. Capt. O. T. Kenan, 29th Inft.; 1st. Lieut. W. V. Cotchett, 11th Cav.; and 2d Lieut. E. L. D. Breckinridge, 7th Inf. (A. D. C.), wounded. |
| Do... | do | A, 27th Inft | | 1 | | | |
| Do... | Sual | Det. 36th Inf | | | | | |
| Do... | Hacienda Tongal | Det. D, 6th Inf | | | | | |
| Do... | Balanga | M, 32d Inf | | | | | |
| Do... | Samponong | Det. D, 26th Inf | | | | | |
| Dec. 20 | Cantapang | F, 17th Inf | | | | | |
| Do... | Balincaguing | 36th Inf | | | | | |
| Do... | Near Carranglan | B, 22d Inf | | 1 | | | |
| Dec. 21 | Near Alos | 36th Inf | | | 1 | | 1st Lieut. W. C. Read, 36th Inf., wounded. |
| Do... | Near Orani | G, 32d Inf | | | | | |
| Dec. 22 | Near Dinalupijan | D, 32d Inf | | | | 1 | |
| Do... | Sara | D, 26th Inf | | | | 1 | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. |  | Wounded. |  | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
|  |  |  | Officers. | Men. | Officers. | Men. |  |
| 1899. |  |  |  |  |  |  |  |
| Dec. 23 | Near Aritos | E, 34th Inf |  |  |  |  |  |
| Dec. 24 | Near Subig | Det. 32d Inf |  |  | 1 | 1 | 1st Lieut. C. C. Smith, 32d Inf., wounded. |
| Do | Near Calamba | E, C, 21st Inf.; A, B, C, 37th Inf |  |  |  |  |  |
| Do | Near Topaz | L, 19th Inf |  |  |  |  |  |
| Dec. 27 | Montalban | E, 6th Art.; A, B, C, D, E, F, I, L, M, 11th Cav.; M, 27th Inf.; A, D, I, L, 29th Inf.; A, B, C, L, 45th Inf. |  |  | 1 | 3 | 1st Lieut. R. S. Enslow, 11th Cav., wounded. |
| Do | Near Baliuag | Det. E, 35th Inf |  |  |  |  |  |
| Do | San Mateo Mountains | B, C, D, I, K, L, M, 46th Inf |  |  |  | 3 |  |
| Dec. 28 | Talavera road | Det. G, 24th Inf |  |  |  |  |  |
| Dec. 29 | Bongabong | G, 24th Inf |  |  |  | 2 |  |
| Dec. 31 | Paniqui | 12th Inf |  | 1 |  |  |  |
| 1900. |  |  |  |  |  |  |  |
| Jan. 1 | Iba | M, 25th Inf |  |  |  |  |  |
| Do | San Cristobal | F, 5th Art.; E, F, G, H, K, M, 39th Inf |  |  |  |  |  |
| Do | Near Calamba | A, B, C, D, 39th Inf |  |  |  |  |  |
| Do | Manaling | L, 39th Inf |  |  |  |  |  |
| Do | San Cristobal River | E, F, G, H, I, L, M, 39th Inf |  |  |  | 5 |  |
| Do | Cabanatuan | A, 34th Inf |  |  |  |  |  |
| Jan. 2 | San Ramon | M, 3d Cav |  |  |  | 1 |  |
| Do | Near Bacoor | C, 28th Inf |  |  |  |  |  |
| Do | Near Maricaban | 1 man (messenger), C, 28th Inf |  |  |  | 1 |  |
| Do | Near Dinalupijan | Det. D, 32d Inf |  |  |  | 1 |  |
| Do | Near Florida Blanca | Det. 3d Inf |  |  |  |  |  |
| Do | Binan | F, 5th Art.; E, F, G, H, I, K, L, M, 39th Inf |  |  |  |  |  |
| Jan. 3 | Carmona | I, L, 39th Inf |  |  |  |  |  |
| Do | Lechina Hill | I, 37th Inf |  |  |  |  |  |
| Do | Near Dinalupijan | Det. E, 32d Inf |  |  |  |  |  |
| Do | Iba | F, 25th Inf |  | 1 |  |  |  |
| Jan. 5 | Comansi | B, K, L, 25th Inf |  | 1 |  | 2 |  |
| Do | Near Balanga | E, 32d Inf |  |  |  |  |  |
| Do | Iba | F, M, 25th Inf |  |  |  |  |  |
| Do | Mount Arayat | 9th Inf.; 12th Inf. (prisoners in hands of insurgents) |  | 2 |  | 3 |  |
| Jan. 6 | Near Binan | E, 6th Art.; A, B, C, D, I, 4th Cav.; C, F, I, M, 11th Cav.; I, K, L, M, 46th Inf.; 30th Inf. |  | 1 |  | 3 |  |
| Do | Mabalacat | L, 25th Inf |  |  |  |  |  |
| Do | Iba | M, 25th Inf |  |  |  |  |  |
| Do | Sudlon Mountain | D, 19th Inf |  |  |  | 1 |  |
| Do | Bautista | 1 man, A, 17th Inf., ambushed |  | 1 |  |  |  |
| Jan. 7 | Near Indang | A, B, C, D, I, 4th Cav.; C, F, I, M, 11th Cav |  | 1 |  | 1 | 1st Lieut. Ward Cheney, 4th Inf., killed. |
| Do | Puente Julien | C and scouts, 4th Inf | 1 | 2 | 1 | 1 | 1st Lieut. W. C. Geiger, 14th Inf., wounded. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do... | Barrio Putol | F, 5th Art.; A, B, C, D, 28th Inf | | | | 9 | |
| Jan. 8 | Sudlon Mountain | G, 6th Art.; D, I, M, 19th Inf.; M, 23d Inf.; I, K, M, 44th Inf | | | | 5 | |
| Jan. 9 | Naic | A, B, C, D, I, 4th Cav.; C, F, I, M, 11th Cav | | 1 | | 2 | |
| Do... | Santo Tomas | F, 5th Art.; A, B, C, 37th Inf.; A, B, C, D, E, F, G, H, 39th Inf | | 1 | 2 | 1 | Capt. H. C. Baker and 1st Lieut. A. M. Petite, 39th Inf., wounded. |
| Jan. 10 | Near Baboulas | Det. 3d Inf | | | | | |
| Do... | Bintog | Det. D, 35th Inf | | | | | |
| Do... | Near Magallanes | K, L, 30th Inf | | | | | |
| Jan. 11 | Near Panitan | 11 men 18th Inf | | 1 | | | |
| Do... | Near Binan | Det. L, 46th Inf | | | | | |
| Do... | Near Santo Tomas | F, 5th Art.; E, 39th Inf.; A, B, C, 37th Inf | | 1 | | | |
| Do... | Talisay | 38th Inf | | | | | |
| Do... | Pulanlay | F, G, 3d Inf | | | | | |
| Do... | Quiangan | E, 33d Inf | | 1 | | | |
| Jan. 12 | Near Santo Tomas | Det. G, 39th Inf | | | | | |
| Do... | Near Sedupin | C, 3d Cav | | 2 | | 8 | |
| Jan. 13 | Near Lipa | F, 5th Art.; 38th Inf., 39th Inf | | 1 | | 2 | |
| Do... | Sapian | L, 18th Inf | | | | | |
| Do... | Near Porac | Det. K, 32d Inf | | | | | |
| Jan. 14 | Caraballos Pass | Det. 34th Inf | | 1 | | 2 | |
| Do... | Bimmanya | E, 3d Cav | | 1 | | | |
| Do... | Near San Pablo | B, C, D, I, 4th Cav.; C, F, I, M, 11th Cav.; A, B, C, 37th Inf | | | | 1 | |
| Do... | Humingan | A, 17th Inf | | | | | |
| Do... | Near San Jose | Det. G, 39th Inf | | | | | |
| Jan. 15 | Tiaon | B, C, D, I, 4th Cav.; C, F, I, M, 11th Cav | | | 1 | | 1st Lieut. O. P. M. Hazzard, 11th Cav., wounded. |
| Do... | San Ildefonso | A, 17th Inf | | | | | |
| Do... | Mount Arayat | Det. M, 34th Inf | | | | | |
| Do... | Near Ibaan | G, M, 39th Inf | | | | | |
| Do... | Near Lipa | I, K, L, 30th Inf | | 1 | | | |
| Jan. 16 | Batangas | A, B, C, D, I, 4th Cav.; A. B, C, D, 38th Inf.; H, 39th Inf | | | | | |
| Do... | Malasiqui | Det. E, 17th Inf | | | | | |
| Do... | Near Lipa | F, 4th Art | | | | 1 | |
| Jan. 17 | Near Rosario | F, 5th Art.; E, F, G, H, 39th Inf | | 1 | | 1 | |
| Do... | Dumandan | F, G, 3d Inf | | | | 1 | |
| Do... | Near Humingan | A, 17th Inf | | | | | |
| Do... | Near Abucay | Det. 32d Inf | | | | | |
| Do... | Near Munoz | K, 34th Inf | | | | | |
| Jan. 18 | Near Porac | Det. 3d Inf | | | | | |
| Do... | Near Alaminos | Det. 30th Inf | | 2 | | 7 | |
| Do... | Near Lemery | F, G, H, 46th Inf | | 1 | | 3 | |
| Do... | Antique | E, 6th Art.; A, C, E, L, 19th Inf | | | | 1 | |
| Jan. 19 | Taal | A, B, C, D, 38th Inf | | | | 7 | |
| Do... | Rosario | G, M, 39th Inf | | | | | |
| Do... | Near Concepcion | D, 30th Inf | | | | 2 | |
| Do... | Near Magallanes | A, E, G, L, 11th Cav.; E, F, G, H, 45th Inf | | | | 2 | |
| Do... | Near Mangatarem | 3 men, 36th Inf., ambushed | | 1 | | | |
| Do... | Sariaya | C, F, I, M, 11th Cav | | 2 | | 4 | |
| Do... | Palasi Pass | C, 3d Cav | | | | 1 | |
| Jan. 21 | Near San Pablo | E, 6th Art.; A, B, C, D, E, F, G, H, M, 30th Inf.; A, B, C, D, 37th Inf.; A, B, C, D, E, G, H, 39th Inf. | | 1 | | 10 | |
| Do... | Sariaya | I, L, 38th Inf | | | | 3 | |
| Jan. 22 | Balincaguing | Dets. D, G, 36th Inf | | | | 3 | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place | Troops engaged. | Killed. |  | Wounded. |  | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
|  |  |  | Officers. | Men. | Officers. | Men. |  |
| 1900. |  |  |  |  |  |  |  |
| Jan. 22 | Tubur | Det. E, 17th Inf |  |  |  |  |  |
| Do | Donsol | A, D, 47th Inf |  |  |  |  |  |
| Jan. 23 | Near Moncada | Det. M, 17th Inf |  |  |  |  |  |
| Do | Legaspi | C, E, F, G, H, 47th Inf |  |  | 1 | 2 | Capt. J. J. Bradley, A. Q. M. V., wounded. |
| Do | Majayjay | A, 4th Cav.; A, B, C, F, G, H, 39th Inf |  |  |  |  |  |
| Jan. 24 | Doninglay | Det. 33d Inf |  |  |  | 1 |  |
| Do | Near Magallanes | A, B, E, G, L, 11th Cav.; I, K, L, M, 45th Inf |  |  |  | 1 |  |
| Jan. 25 | Near Tanay | E, H, 27th Inf |  | 1 |  | 1 |  |
| Do | Dasol | Dets. C, D, G, 36th Inf |  | 1 |  |  |  |
| Do | Near Lipa | F, H, 38th Inf |  |  |  |  |  |
| Do | Darago | F, H, 47th Inf |  | 1 |  | 2 |  |
| Do | Bulacan | Macabebe Scouts |  |  | 1 |  | 2d Lieut. D. P. Quinlan, 11th Cav., wounded. |
| Jan. 26 | Calbayog | E, F, G, H, 43d Inf |  |  |  |  |  |
| Do | Donsol | F, H, 47th Inf |  |  |  |  |  |
| Do | Near Santa Cruz | Dets. F, I, 36th Inf |  |  |  |  |  |
| Jan. 27 | San Luis | B, C, D, 38th Inf |  |  | 1 | 2 | Maj. C. H. Muir, 38th Inf., wounded. |
| Do | Cavitan | A, C, 19th Inf |  |  |  | 4 |  |
| Do | Catbalogan | I, K, L, M, 43d Inf |  | 1 |  | 2 |  |
| Jan. 28 | Barrio Putol | F, 5th Art.; A, B, C, D, 28th Inf |  |  |  |  |  |
| Do | Mandagore | B, G, 19th Inf |  |  |  |  |  |
| Do | Cavinti | L, M, 37th Inf |  |  |  |  |  |
| Do | Buenavista | A, B, D, 47th Inf |  |  |  |  |  |
| Do | Tayabas | A, B, C, D, 30th Inf |  |  | 1 | 1 | 2d Lieut. G. A. Boyle, 30th Inf., wounded. |
| Jan. 29 | Donsol | A, D, 47th Inf |  |  |  |  |  |
| Do | Sampaloc | C, D, 37th Inf.; E, 39th Inf |  |  |  | 1 |  |
| Do | Near Castellejos | Dets. B, K, L, 25th Inf | 1 | 3 |  | 5 | 1st Lieut. W. T. Schenck, 25th Inf., killed. |
| Do | Sogod | B, G, 19th Inf |  |  |  |  |  |
| Do | Near Catbalogan | I, K, L, M, 43d Inf |  |  |  |  |  |
| Do | Taui Taui Island | 5 men, Co. H, 23d Inf., ambushed |  | 2 |  | 2 |  |
| Jan. 30 | Donsol | A, D, 47th Inf |  |  |  |  |  |
| Do | Albay | Det. 47th Inf |  |  |  | 1 |  |
| Jan. 30 | Madelay | Dets. F, G, H, 44th Inf |  |  |  | 1 |  |
| Jan. 31 | Donsol | A, D, 47th Inf |  |  |  |  |  |
| Do | Near San Isidro | Det. B, 34th Inf |  | 1 |  |  |  |
| Do | Albay | F, G, H, 47th Inf |  |  |  | 1 |  |
| Feb. 1 | Near Cavinti | F, K, L, M, 37th Inf |  |  |  |  |  |
| Do | Sulipa | Det. A, 12th Inf |  | 1 |  |  |  |
| Feb. 2 | Near Mabalacat | 6 men, B, 41st Inf., ambushed |  | 1 |  | 1 |  |
| Do | Near Lake Bombon | Det. K, 39th Inf |  |  |  |  |  |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do... | Near Lucena | Det. M, 30th Inf | | | | | |
| Do... | Murcia | I, 9th Inf | | | | | |
| Feb. 3 | Near Najpore | Det. H, 43d Inf | | | | 1 | |
| Do... | Lanot | E, H, 30 Inf | | | | | |
| Feb. 4 | Near Sampaloc | Dets. E, H, 30th Inf | | | | 2 | |
| Do... | Fort Amia | Det. G, 19th Inf | | | 1 | | Capt. E. D. Smith, 19th Inf., wounded. |
| Do... | Near Pagsajan | C, G, 42d Inf | | | | 2 | |
| Do... | Taal | L, 6th Inf | | 1 | | | |
| Feb. 5 | Near Consolacion | K, 19th Inf | | | | 1 | |
| Do... | Near Llana Hermosa | Det. G, 32d Inf | | 6 | | | |
| Do... | Cautero | Det. K, 18th Inf | | | | 2 | |
| Do... | Paquil | Dets. D, E, F, H, 42d Inf | | | 1 | 1 | Capt. E. Du Bois, 42d Inf., wounded. |
| Do... | Tiaon | Dets. B, C, D, 39th Inf | | | | | |
| Do... | Talambang | K, 19th Inf | | | | | |
| Do... | Near Mandoag | C, 13th Inf | | | | | |
| Do... | Near Tayabas | Det. M, 30th Inf | | | | | |
| Do... | Near Lake Taal | Dets. I, K, 39th Inf | | | | | |
| Feb. 6 | Albay | F, G, H, 47th Inf | | | 2 | 3 | Capt. G. H. Bentley and 2d Lieut. W. R. Harrison, 47th Inf., wounded. |
| Do... | Darago | F, H, 47th Inf | | 2 | | 3 | |
| Do... | Patnongon | C, 19th Inf | | 1 | | | |
| Do... | Near Candelaria | Dets. B, C, D, 39th Inf | | | | | |
| Feb. 7 | Dasol | E, K, 4th Cav.; det. 36th Inf | | | | | |
| Do... | Near Cabanatuan | L, 34th Inf | | | | | |
| Do... | Paquil | Dets. D, E, F, H, 42d Inf | | | | | |
| Do... | Near Magdalena | Det. A, 4th Cav.; det. 11th Cav.; det. 37th Inf | | | | 3 | |
| Feb. 8 | Darago | F, 3d Art., F, 40th Inf.; dets. F, H, 47th Inf | | | | 1 | |
| Feb. 9 | Subig | B, K, L, 25th Inf | | | | | |
| Do... | Tabaco | F; 3d Art., L., 47th Inf | | | | | |
| Do... | Near Bauan | I, 38th Inf | | | | | |
| Do... | Near Legaspi | G, 40th Inf | | | | | |
| Do... | Bong Bong | L, 6th Inf | | | | 1 | |
| Do... | Sapong Maragul | G, 9th Inf | | | | | |
| Do... | Near Dasol | E, K, 4th Cav.; Det. 36th Inf | | | | | |
| Feb. 11 | Near Santa Cruz | Det. C, 4th Cav | | | | 1 | |
| Do... | Near Tayabas | B, 30th Inf | | | | | |
| Do... | Near Aliaga | I, 24th Inf | | | | | |
| Do... | Near Angono | M, 27th Inf | | | | | |
| Feb. 12 | Santa Clara | I, K, L, M, 39th Inf | | | 1 | 2 | 1st Lieut. P. L. Smith, 39th Inf., wounded. |
| Do... | Near Albay | Dets. G, H, 40th Inf | | | | 1 | |
| Feb. 13 | Barrio Bartolome | Dets. I, K, L, M, 27th Inf | | | | | |
| Do... | Lumbang | Dets. D, F, H, 42d Inf | | | | | |
| Do... | Near Madalag | A, 6th Inf | | | | | |
| Do... | Niagao | M, 26th Inf | | | | | |
| Do... | Tabaco | Det. 47th Inf | | | | 1 | |
| Feb. 14 | Darago | E, F, H, 40th Inf.; K, 47th Inf | | 1 | | | |
| Do... | Near Barotoc | Det. 44th Inf | | | | | |
| Do... | Tinuba | G, 9th Inf | | | | | |
| Feb. 15 | Pagsajan | G, 42d Inf | | 2 | | | |
| Do... | Near Alcala | B, 17th Inf | | | | | |
| Do... | Near Tanay | H, 27th Inf | | | | | |
| Do... | Patnongon | G, 6th Art.; A, C, L, 19th Inf | | 1 | | | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. |  | Wounded. |  | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
|  |  |  | Officers. | Men. | Officers. | Men. |  |
| 1900. |  |  |  |  |  |  |  |
| Feb. 15 | Barangban | E, 19th Inf |  |  |  | 1 |  |
| Do | Cavitan | G, 6th Art.; A, C, L, 19th Inf |  |  |  | 3 |  |
| Feb. 16 | Near Magdalena | Dets. A, B, C, D, 37th Inf |  |  |  | 1 |  |
| Do | Near Pozorrubio | Det. B, 13th Inf |  |  |  |  |  |
| Do | Near Cavitan | Det. 18th Inf |  |  |  | 1 |  |
| Feb. 17 | Barangban | E, 19th Inf |  |  |  | 2 |  |
| Do | Tagudin | H, 29th Inf |  | 1 |  |  |  |
| Do | Near Pozorrubio | Det. B, 13th Inf |  |  |  |  |  |
| Do | Near Castellana | D, 44th Inf |  |  |  |  |  |
| Do | Cavitan | L, 6th Inf |  |  |  |  |  |
| Feb. 18 | Antipoline | L, M, 30th Inf |  |  |  |  |  |
| Do | Botolan | Det. H, 25th Inf |  |  |  | 2 |  |
| Do | Near San Juan | Det. M, 3d Cav |  |  |  |  |  |
| Do | Dingle | 1 man, B, 26th Inf., ambushed |  | 1 |  |  |  |
| Feb. 19 | Lucban | G, H, 30th Inf |  |  |  |  |  |
| Do | Near Paquil | Dets. E, F, 42d Inf |  |  |  |  |  |
| Feb. 20 | Calabanga | E, F, G, H, 45th Inf |  | 1 |  |  |  |
| Do | Near Mandilla | K, 22d Inf |  |  |  |  |  |
| Do | Libmanan | G, 37th Inf.; A, B, C, D, 40th Inf |  |  | 1 | 8 | 1st Lieut. J. B. Galleher, 40th Inf., wounded. |
| Feb. 21 | Donsol River | Dets., A, D, 47th Inf |  | 1 |  |  |  |
| Do | Calinog | A, B, C, 26th Inf |  |  |  |  |  |
| Feb. 22 | Near Botolan | Det. M, 25th Inf |  |  |  |  |  |
| Do | Palasi Pass | C, M, 3d Cav.; H, 29th Inf.; E, G, 33d Inf |  | 1 |  | 1 |  |
| Do | Camalig | F, 3d Art., E, F, G, H, 40th Inf |  |  |  | 1 |  |
| Do | Barrio Aguilar | Dets. B, E, 36th Inf |  |  |  |  |  |
| Do | Darago | E, F, G, 40th Inf.; det. 47th Inf |  |  |  |  |  |
| Do | Comogisongalan | Det. 36th Inf |  |  |  |  |  |
| Feb. 23 | Majayjay | D, 37th Inf |  |  |  | 1 |  |
| Do | Near Paete | Dets. E, H, 42d Inf |  |  |  |  |  |
| Do | Calinog | F, 26th Inf |  | 3 |  |  |  |
| Do | Guinobatan | F, 3d Art.; E, F, G, H, 40th Inf |  |  |  |  |  |
| Feb. 24 | Near Tangalan | C, 6th Inf |  |  | 1 | 3 | 1st Lieut. F. C. Bolles, 6th Inf., wounded. |
| Do | Sevilla | D, 30th Inf |  | 1 |  |  |  |
| Do | Barrio Tamboilan | Det. 44th Inf |  |  |  |  |  |
| Do | Near Urdaneta | Det. G, 13th Inf |  |  |  |  |  |
| Do | Near Lemery | D, 28th Inf |  |  |  |  |  |
| Feb. 25 | Alaminos | D, G, 36th Inf |  |  |  |  |  |
| Do | Near Andangan | A, C, D, I, K, M, 45th Inf |  |  |  |  |  |
| Feb. 26 | Near San Juan | D, 3d Cav |  | 1 |  |  |  |
| Feb. 27 | Barrio Guimball | Det. B, 19th Inf |  |  |  | 2 |  |
| Do | Near Tigaon | C, D, 40th Inf |  | 1 |  | 3 |  |
| Do | Near San José | I, 38th Inf |  |  |  |  |  |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Feb. 28 | Near Magdalena | Dets. A, B, 37th Inf | | | 1 | | Capt. S. Van Leer, 37th Inf., wounded. |
| Do | Somocat | L, M, 37th Inf | | | | 1 | |
| Do | Tagun | C, 16th Inf | | 1 | | 2 | |
| Do | Near Iligan | Det. E, 16th Inf | | 1 | | | |
| Mar. 1 | Near La Lud | A, B, 40th Inf | | 2 | | 1 | |
| Do | Linao | B, 16th Inf.; Hosp. Corps | | 2 | 1 | 5 | Maj. H. C. Ward, 16th Inf., wounded. |
| Mar. 2 | Pagsajan | Det. E, I, 37th Inf | | | | 1 | |
| Do | Barrio Antipolo | A, 45th Inf | | | | | |
| Do | Libog | E, 40th Inf | | | | | |
| Mar. 3 | San Francisco | C, 3d Cav | | 2 | | 1 | |
| Do | Near Atimonan | Det. K, 30th Inf | | | | | |
| Mar. 4 | Near Luisiana | G, 30th Inf | | | | | |
| Do | Near Atimonan | H, 30th Inf | | | | | |
| Do | Paete | E, 42d Inf | | | | 1 | |
| Do | Barrio Tinuba | H, K, 9th Inf | 1 | | | | 1st Lieut. E. F. Koehler, 9th Inf., killed. |
| Mar. 5 | Cabugao | Det. L, 33d Inf | | | | 1 | |
| Do | Near Tayabas | Det. I, 30th Inf | | | | | |
| Mar. 6 | Penaranda | Det. I, 34th Inf; Hosp. Corps | | | 1 | | A. A. Surg. W. C. Chidester, wounded. |
| Do | Near Sariaya | C, 30th Inf | | | | | |
| Do | Dasol | Macabebe Scouts | | | 1 | | 1st Lieut. Frank T. McNarney, 36th Inf., wounded. |
| Mar. 7 | Near Magdalena | Det. L, 37th Inf | | | | 1 | |
| Do | Near Bangued | D, 33d Inf | | 1 | | 1 | |
| Do | Near Paquil | Dets. E, H, 42d Inf | | | | | |
| Do | Near Cabu | Det. L, 34th Inf | | | | | |
| Do | Near Pagsajan | Dets. D, E, 37th Inf | | | | | |
| Mar. 8 | Near Matuguinao | Det. H, 43d Inf | | 1 | 1 | 4 | 1st Lieut. J. T. Sweeney, 43d Inf., wounded. |
| Do | Paquil | Dets. H, E, 42d Inf | | | | | |
| Do | Malabog | H, 40th Inf | | | | | |
| Do | Near La Paz | Det. A, 43d Inf | | 1 | | | |
| Mar. 9 | Near Badoc | Det. L, 33d Inf | | 1 | | 1 | |
| Do | Near Atimonan | I, K, 30th Inf | | | | | |
| Do | Bugason | H, 18th Inf | | | | | |
| Mar. 10 | Near Bay | Dets. F, G, 39th Inf | | | | 4 | |
| Do | Igburi | A, C, E, L, 19th Inf | | | | 1 | |
| Do | Near Atimonan | Det. K, 30th Inf | | | | | |
| Do | Valderrama | A, C, E, L, 19th Inf.; I, L, 44th Inf | | | | 1 | |
| Mar. 11 | Paranas | Det. M, 43d Inf | | | | 3 | |
| Do | Malabog | F, 40th Inf | | | | | |
| Do | Dagami | 3 men, A, 43d Inf., ambushed | | 1 | | | |
| Do | Bugason | H, 18th Inf | | | | | |
| Do | Lanan | I, 43d Inf | | 1 | | | |
| Mar. 12 | Hilongos | Det. C, 43d Inf | | | | 1 | |
| Mar. 13 | Barrio Ibus | B, 41st Inf | | | | | |
| Do | Near Bardoc | Det. H, 34th Inf | | | | | |
| Do | Puerta Rivas | Det. 32d Inf.; Macabebe Scouts | | | | | |
| Do | Near Bugason | A, C, 19th Inf | | | | | |
| Mar. 14 | Near Magdalena | Dets. A, B, C, D, 37th Inf | | | | 2 | |
| Do | Near San Manuel | Det. H, 13th Inf | | | | | |
| Do | Guinobatan | E, F, G, H, M, 40th Inf.; I, F, H, 47th Inf | | | | 2 | |
| Do | Taisan | L, 38th Inf | | | | 1 | |
| Do | Bagnotan | Det. D, 3d Cav | | 1 | | 1 | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Trooops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1900. | | | | | | | |
| Mar. 14 | Near Balanga | Det. E, 32d Inf | | | | | |
| Do | Near Bugason | H, 18th Inf.; E, L, 19th Inf | | | | | |
| Mar. 15 | Guisijan | H, 18th Inf.; A, C, E, L, 19th Inf | | | | | |
| Do | Atimonan | I, K, 30th Inf | | | | | |
| Do | Cuenca | I, 38th Inf | | | | 2 | |
| Mar. 16 | Nagcarlang | Det. B, C, 39th Inf | | | | 1 | |
| Do | Barrio Nana | Det. D, 32d Inf | | | | | |
| Do | Near Jaro | Det. B, 43d Inf | | 1 | | | |
| Do | San Diego Hill | A, C, 39th Inf | | | | | |
| Mar. 17 | Pampanga River | G, 4th Cav.; Det. 34th Inf.; 32d Inf. scouts; Macabebe Scouts | | | | | |
| Do | Barrio Balabago | Det. 41st Inf | | | | | |
| Do | Sampaloc | E, F, L, M, 30th Inf | | | | | |
| Do | Cabang Cunjua | Det. D, 44th Inf | | | | | |
| Mar. 18 | Manauan | C, E, 16th Inf | | | 1 | | 2d Lieut. C. M. Gordon, jr., 16th Inf., wounded. |
| Do | Near Aliaga | Det. C, 12th Inf | | | | | |
| Do | Cabug Cabug | L, 18th Inf | | | | | |
| Do | Polanqui | G, 37th Inf.; A, D, E, K, M, 45th Inf | | | | 1 | |
| Do | Near Tagudin | Det. E, G, 33d Inf | | | | 1 | |
| Do | Near Sampaloc | Det. C, 37th Inf | | | | | |
| Do | Polumgubat | Det. 3d Inf | | | | | |
| Mar. 19 | Near Atimonan | Det. H, 30th Inf | | | | | |
| Do | Legoa Pass | G, 37th Inf | | | | | |
| Mar. 20 | Near Camalig | G, 37th Inf.; A, D, E, K, M, 45th Inf | | 1 | | 1 | |
| Do | Mapotas | E, 18th Inf | | | | | |
| Do | Darago | G, 37th Inf.; A, D, E, K, M, 45th Inf | | | | | |
| Mar. 21 | Paete | E, 42d Inf | | | | | |
| Do | La Granja | Det. E, 43d Inf | | | | 1 | |
| Do | Pozorrubio | Det. B, 13th Inf | | | | | |
| Mar. 22 | Cabug-Cabug | L, 18th Inf | | 1 | | 2 | |
| Do | Near Cavinti | K, 37th Inf | | | | | |
| Do | Near Sexmoan | Macabebe Scouts | | | | | |
| Mar. 23 | Camalig | G, 37th Inf.; A, D, E, K, M, 45th Inf | | | | | |
| Do | Near Sariaya | Det. F, 30th Inf | | | | | |
| Do | Near Caratan | E, 18th Inf | | | | | |
| Do | Guadelupe River | I, 23d Inf | | | | | |
| Do | Ticona | L, 18th Inf | | | | | |
| Mar. 24 | Near Hiaboug | Det. I, L, 43d Inf | | | | 2 | |
| Do | Near Malolos | I, K, L, M, 30th Inf | | | | 1 | |
| Do | Penaranda River | G, 4th Cav.; Scouts 3d Brig., 2d Div | | | 1 | 1 | 1st Lieut. O. R. Wolfe, 22d Inf., wounded. |
| Mar. 25 | Guisijan | A, C, E, 19th Inf | | | | | |
| Do | Near Batangas | G, 38th Inf | | 1 | | | |
| Do | Near Bugason | C, E, 19th Inf | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Mar. 26 | Calbayog | E, F, G, H, 43d Inf | | 1 | | 8 | |
| Mar. 27 | San José de Buenavista | H, 18th Inf | | | | 1 | |
| Do | Gandara | Det. 43d Inf | | | | | |
| Mar. 28 | Mabalacat | K, 9th Inf | | | | | |
| Mar. 29 | Malitbloc | Det 43d Inf | | | | 1 | |
| Do | Near Paete | Det. E, L, 42d Inf | | | | | |
| Mar. 30 | Barboza | E, 18th Inf.; A, C, E, 19th Inf | | | | | |
| Do | Near Baruso | Det. B, 43d Inf | | | | 1 | |
| Mar. 31 | Near Dagami | 43d Inf. Scouts | | | | 1 | |
| Do | Near San Jose | I, 43d Inf | | | | 2 | |
| Do | Batauan | E, 18th Inf.; A, C, E, 19th Inf | | 1 | | | |
| Do | Near Mabalacat | Det. K, 9th Inf | | 1 | | | |
| Do | Near Colasi | E, 18th Inf.; A, C, E, 19th Inf | | | | 1 | |
| Do | Near Balamban | Dets. K, L, M, 44th Inf | | | | | |
| Apr. 1 | Guisijan | A, 19th Inf | | | | 1 | |
| Apr. 2 | Near San Nicholas | L, 47th Inf | | | | | |
| Do | Batac | A, 3d Cav | | | | | |
| Apr. 3 | Cavitan | A, L, 19th Inf | | | | | |
| Do | Near Apalit | 3 men, K, 3d Inf., ambushed | | 3 | | | |
| Do | Near Bugason | E, 18th Inf | | | | | |
| Apr. 4 | Bicol River | Det. E, 45th Inf | | | | | |
| Do | Near San Vicente | Det. F, 13th Inf.; det. 24th Inf | | | | | |
| Apr. 5 | Near Lambunao | G, 26th Inf | | | | | |
| Apr. 6 | Near Balioang | C, 3d Cav | | | | | |
| Do | Barrio Ayson | A, 12th Inf | | 1 | | | |
| Do | Barrio Cabalitocan | Det. D, 3d Cav | | | | | |
| Do | Near Lapo | Det. L, 33d Inf | | | | | |
| Do | Barrio Bartolome | Det. C, D, 27th Inf | | | | | |
| Apr. 7 | Cagayan | I, K, L, M, 40th Inf | | 3 | 1 | 10 | Capt. W. J. Watson, 40th Inf., wounded. |
| Do | Near Mayantoc | L, 4th Cav.; A, D, E, I, L, M, 17th Inf | | | 1 | | 1st Lieut. F. J. Morrow, 17th Inf., wounded. |
| Do | Santa Marguerita | Det. G, 43d Inf | | | | | |
| Apr. 8 | Nueva Caceres | K, 45th Inf | | 1 | | | |
| Do | Balanga | D, E, 32d Inf | | | | | |
| Apr. 9 | Near Donsol | Det. D, 47th Inf | | | | | |
| Do | Near San Jacinto | Det. B, 13th Inf | | | | | |
| Do | Near San Manuel | Det. 13th Inf | | | | 1 | |
| Apr. 10 | Malabog | F, H, 47th Inf | | | | | |
| Do | Lavezares | E, 43d Inf | | | | | |
| Do | Guinobatan | F, H, 47th Inf | | | | | |
| Apr. 11 | Near Guinobatan | do | | | | 1 | |
| Do | Near Orion | Det. B, C, 32d Inf | | 2 | | | |
| Do | Asingan | F, 13th Inf | | | | | |
| Apr. 12 | Near Ligao | F, H, 47th Inf | | | | 1 | |
| Do | Asingan | F, 13th Inf | | | | | |
| Do | Anatora | F, 44th Inf | | | | | |
| Do | Currimaoa | Det. G, 34th Inf | | | | | |
| Do | Near Nippero | Det. E, G, 43d Inf | | | 1 | | 1st Lieut. H. J. Stewart, 43d Inf., wounded. |
| Apr. 13 | San Augustin | 12th Inf. Scouts | | | | | |
| Do | Barrio Sanchez | F, 13th Inf | | | | | |
| Do | Guinobatan | F, H, 47th Inf | | | | | |
| Do | Mount Agsarab | H, 26th Inf | | | | | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1900. | | | | | | | |
| Apr. 14 to Apr. 19 | Catubig | H and Det. F, 43d Inf | | 18 | | 5 | |
| Apr. 14 | Barrio Carasucan | Dets. E, F, H, 13th Inf | | | | | |
| Do | Near Paquil | Det. L, 42d Inf | | | | | |
| Do | Near San Augustin | Det. 12th Inf | | | | | |
| Do | Malitbog | Det. 43d Inf | | | | 2 | |
| Do | Near Donsol | A, 47th Inf | | | | | |
| Do | Baler | Det. D, 34th Inf | | | | | |
| Apr. 15 | Cullebeng | F, 3d Cav | | | | 1 | |
| Do | Near Pasacao | Det. H, 45th Inf | | | | 2 | |
| Do | Vintar | Det. F, H, 34th Inf | | | | | |
| Do | Jaro | B, 43d Inf | | | | | |
| Do | Barrio Nagbuguel | H, 33d Inf | | | | | |
| Apr. 16 | Batac | A, L, 3d Cav.; B, G, 34th Inf | | 2 | | 3 | |
| Do | Bacon | Det. K, M, 47th Inf | | | | | |
| Do | Colasi | C, E, 19th Inf | | | | | |
| Do | Near Pasacao | Det. H, 45th Inf | | | | | |
| Do | Near Orion | Det. B, 32d Inf | | | | | |
| Do | San Manuel | H, 13th Inf | | | | | |
| Do | Near Ondong | Det. 48th Inf | | | | | |
| Do | Salcedo | E, 33d Inf | | | | | |
| Do | Taisan | Det. C, 38th Inf | | | | 1 | |
| Do | Near Vintar | Det. H, 34th Inf | | | | | |
| Apr. 17 | Laoag | A, 3d Cav.; F, H, 34th Inf | | | | | |
| Do | Near Agsarab | G, H, 26th Inf | | | | 4 | |
| Do | Near Pulilan | Det. M, 35th Inf | | 1 | | 1 | |
| Do | San Luis | L, 22d Inf | | | | | |
| Do | Colasi | C, E, 19th Inf | | | | | |
| Do | Near San Manuel | H, 13th Inf | | | | | |
| Do | Barrio Capat | Det. B, 32d Inf.; Macabebe Scouts | | | | | |
| Do | San Miguel | Det. H, 35th Inf | | | | | |
| Apr. 18 | Near Orion | Macabebe Scouts | | | 1 | | 2d Lieut. J. P. Hasson, 35th Inf., wounded. |
| Do | Near San Miguel | Det. H., 35th Inf | | | | | |
| Do | Colasi | C, E, 19th Inf | | | | | |
| Do | Near Nabua | Det. E, 45th Inf | | | | | |
| Do | Near San Miguel | 1 man, B, 35th Inf | | | | 1 | |
| Apr. 19 | Near Salcedo | Det. E, G, 33d Inf | | | | 1 | |
| Do | Barrio Mabaleng | A, 3d Cav | | 1 | | | |
| Do | Near Barcelona | L, 47th Inf | | | | | |
| Do | Colasi | C, E, 19th Inf | | | | | |
| Do | Penaranda | G, 4th Cav | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do... | San Jacinto | D, 18th Inf | | | | | |
| Do... | Near San Fernando | Det. M, 45th Inf | | | | | |
| Apr. 20 | Near Camalig | I, 47th Inf | | | | 2 | |
| Do... | Macton | Band, 44th Inf | | | | | |
| Do... | Tanay | Det. F, 42d Inf | | | | | |
| Do... | Near Pilar | Det. B, 33d Inf | | | | | |
| Apr. 21 | San Nicolas | A, 3d Cav | | | | | |
| Do... | Near Paete | Det. L, 42d Inf | | | | | |
| Do... | Bantiyan | Det. E, G, 47th Inf | | | | | |
| Do... | Batac | G, 34th Inf | | | | | |
| Apr. 22 | Candaba | B, D, L, 35th Inf | | | | | |
| Do... | Mabaleng | F, 3d Cav | | | | | |
| Apr. 23 | Near Castro | Det. F, 48th Inf | | | | | |
| Do... | Near San Antonio | G, 4th Cav | | | | | |
| Do... | Near Bangar | Det. H, 48th Inf | | | | | |
| Do... | Near Salcedo | G, 33d Inf | | | | | |
| Apr. 24 | do | E, G, 33d Inf | | | | 1 | |
| Apr. 25 | Batac River | F, 3d Cav | | | | 1 | |
| Do... | Bulusan | Det. 47th Inf | | | | 1 | |
| Do... | Bato | Det. E, 45th Inf | | | | | |
| Do... | Calbayog | H, 43d Inf | | | | | |
| Do... | Near Paquil | Det. E, L, 42d Inf | | | | | |
| Apr. 26 | La Paz | I, K, 23d Inf.; C, K, 43d Inf | | 2 | | 13 | |
| Do... | Near Buranen | K, 43d Inf | | | | 1 | |
| Do... | La Paz | Det. 43d Inf.; A, D, 44th Inf | | | | 4 | |
| Do... | Tacloban | 1 man, A, 43d Inf., ambushed | | | | 1 | |
| Do... | Bantiyan | Det. E, G, 47th Inf | | | | | |
| Do... | Cagayan | K, 40th Inf | | 1 | | | |
| Apr. 27 | Legaspi | H, 47th Inf | | | | 1 | |
| Do... | Daet | B, 45th Infantry | | | | | |
| Do... | Near Orion | Det. B, 32d Inf | | | | | |
| Do... | Near Mount Samal | Dets. B, C. 32d Inf | | | | | |
| Apr. 28 | Patnongon | E, G, H, 44th Inf | | 2 | 1 | 1 | 2d Lieut. G. F. Schlachter, 44th Inf., wounded. |
| Do... | San Vicente | Det. 22d Inf | | | | | |
| Do... | Sibalon | A, 19th Inf | | | | | |
| Do... | Muntinlupa | A, C, 21st Inf | | | | | |
| Do... | Near Batac River | F, 3d Cav | | | | | |
| Apr. 29 | Near Tinagaya | Dets. G, H, 26th Inf | | | | 1 | |
| Do... | Alang-Alang | B, 43d Inf | | | | | |
| Do... | Tamorang | F, 48th Inf | | | | | |
| Do... | Malabon | Det. H, 31st Inf | | | | | |
| Do... | Barrio Balaon | Dets. I, H, 35th Inf | | 1 | | | |
| Apr. 30 | Near Manaoag | H, 4th Cav | | | | | |
| Do... | Near Salcedo | Det. G, 33d Inf | | | | | |
| May 1 | Catarman | F, 43d Inf | | | | 2 | |
| Do... | Malabog | I, 47th Inf | | | | | |
| Do... | Barrio Cabaritan | Native scouts | | | | | |
| Do... | Cadanglovan | E, 3d Cav | | | | | |
| May 2 | Jimenez | D, 40th Inf | | | | | |
| Do... | Palanoz | B, C, D, 29th Inf | | | | | |
| Do... | Near Daet | B, 45th Inf | | | | | |
| May 3 | Near Santa Cruz | Det. F, 44th Inf | | 1 | | 1 | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1900. | | | | | | | |
| May 3 | Near Dablain | Det. A, 48th Inf | | | | | |
| Do | Jaen | G, 4th Cav | | | | | |
| May 4 | Bonanguran | Det. 47th Inf | | | | 3 | |
| Do | Near Candon | Det. G, 33d Inf | | | | | |
| Do | Naic | F, 11th Cav | | | | 1 | |
| Do | Batayan | Det. E, G, 47th Inf | | | | | |
| May 5 | Polo | Det. 43d Inf | | | 1 | | Capt. L. E. Polk, 43d Inf., wounded. |
| Do | Near Canayan | Det. I, 49th Inf | | | | | |
| Do | San Vincente | A, D, 47th Inf | | | | | |
| Do | Barrio San Antonio | Det. 41st Inf | | | | | |
| Do | Near San Quentin | K, 24th Inf | | | | 1 | |
| May 6 | Near San Manuel | Det. H, 13th Inf | | 1 | | | |
| Do | Dongon Pass | Det. K, 48th Inf.; Macabebe Scouts | | | | 4 | |
| Do | Hilongos | I, K, 23d Inf.; C, K, 43d Inf | | | | 4 | |
| Do | Near Pambujan | Dets. E, F, H, 43d Inf | | | | 1 | |
| Do | Candelaria | Dets. E, F, H, 25th Inf | | | | | |
| Do | Villasis | Det. F, 13th Inf.; Macabebe Scouts | | | | | |
| Do | Barbarit | Det. A, 48th Inf | | | | | |
| Do | Near San Juan de Guimba | Det. K, 34th Inf | | | | | |
| Do | Near Donsol | Det. 47th Inf | | | | | |
| May 7 | Pamplona | M, 45th Inf | | 1 | | 1 | |
| Do | Mount Samal | Det. E, 32d Inf | | | | | |
| Do | Quiem | Det. G, 34th Inf | | | | 1 | |
| Do | Near Rosario | B, det. K, 48th Inf.; det. M, 3d Cav | | | | | |
| May 8 | Calbayog | E, F, H, 43d Inf | | | | 1 | |
| Do | Barrio Abass | Det. D, 33d Inf | | | | | |
| Do | Panaga | Det. C, 13th Inf | | | | | |
| Do | Near Orion | Dets. B, C, 32d Inf | | | | | |
| May 9 | Taytay | Det. C, 42d Inf | | | | | |
| Do | Angono | Det. C, 42d Inf | | | | | |
| Do | Santa Barbara | Det. I, 22d Inf | | | | | |
| Do | Near Mexico | Det. E, 41st Inf | | | | | |
| May 10 | Calabanga | Det. 45th Inf | | | | 1 | |
| May 11 | Near Matignao | I, 23d Inf.; A, C, E, K, 43d Inf | 1 | 2 | | 4 | 1st Lieut. J. H. Evens, 43d Inf., killed. |
| Do | Valderrama | H, 18th Inf | | | | | |
| Do | Near Magaan | Det. A, D, 47th Inf | | | | | |
| May 12 | Dulag | A, 44th Inf | | | | | |
| Do | Near San Manuel | Det. H, 13th Inf | | | | | |
| Do | Near Pozorrubio | 1 man, Co. B, 13th Inf., ambushed | | 1 | | | |
| Do | Paransas | Det. I, 43d Inf | | | | 1 | |
| Do | Alwayan | F, 48th Inf | | | | | |
| May 13 | Near Tangadan | Det. E, 34th Inf | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do | Near Lumbal | Det. B, 33d Inf | | | | | |
| Do | Palanig | Det. 25th Inf | | | | 1 | |
| May 14 | Near Camalig | B, 11th Cav | | | | 1 | |
| Do | Agusan | I, K, 40th Inf | | 2 | | 8 | |
| Do | San Miguel | Det. G, 33d Inf | | | | | |
| Do | Loculan | C, F, 40th Inf | | 7 | | 4 | |
| May 15 | Near Alfonso | Dets. E, F, G, H, 28th Inf | | | | | |
| Do | Amontoc | Det. E, 48th Inf | | | | 1 | |
| Do | Toboatin River | G, 4th Cav | | | | | |
| Do | Near Vintar | Det. E, 34th Inf | | | | | |
| May 16 | Near Abucay | Dets. D, E, F, 32d Inf | | | | | |
| Do | Near Balioang | Det. F, 48th Inf | | | | | |
| Do | Near Donsol | A, D, 47th Inf | | | | | |
| Do | Paransas | Det. 43d Inf | | | | 1 | |
| May 17 | Alian | Det. F, 47th Inf | | | | 2 | |
| Do | Simali | A, 23d, Inf | | | | | |
| May 18 | Paransas | Det. I, 43d Inf | | | | 1 | |
| May 19 | Boljoon | A, 23d Inf | | | | | |
| Do | Near Nomong | Det. G, 33d Inf | | | | | |
| Do | Near San Quinton | Native scouts | | | | | |
| May 20 | Tuguegarao | K, 49th Inf | | | | | |
| Do | Barrio Santa Cruz | D, 38th Inf | | | | | |
| May 21 | Boljoon Mountains | A, 23d Inf | | | | 1 | |
| Do | Malitcong | C, D, 33d Inf | | | | | |
| Do | Libmanan | Det. 45th Inf | | | | 2 | |
| May 22 | Pasigay | L, M, 43d Inf | | | | 2 | |
| Do | Near Lipa | Det. H, 38th Inf | | | 1 | | 2d Lieut. Fred Bury, 38th Inf., wounded. |
| Do | Tabaco | Det. E, 47th Inf | | | | 1 | |
| May 23 | Pindangan | Det. B, 13th Inf | | | | | |
| May 24 | Near San Miguel | G, 4th Cav | | | | | |
| Do | Barrio Brabscal | F, 35th Inf | | | | | |
| Do | Barrio Bayambayana | 5 men, B, 27th Inf., ambushed | | 1 | | | |
| Do | Near Lipicat | L, K, 45th Inf | | | | | |
| May 25 | Abucay | F, 32d Inf | | | | | |
| Do | Near Similoan | L, 37th Inf | | | | | |
| May 26 | Candaba | K, M, 22d Inf | | 1 | | | |
| Do | Near Labo | Det. B, 45th Inf | | | | | |
| Do | San Miguel | L, 35th Inf | | | | | |
| May 28 | Labo | Det. B, 45th Inf | | 3 | 1 | 8 | Capt. A. Steinhauser, 45th Inf., wounded. |
| Do | Near Sugod | Det. K, M, 47th Inf | | | | | |
| May 29 | Cabagan Nuevo | F, 49th Inf | | | | | |
| Do | Near San Luis | Det. I, 35th Inf | | 3 | | 2 | |
| Do | Santa Lucia | Det. 33d Inf | | | | 1 | |
| Do | Santa Ana | F, 41st Inf | | | | | |
| Do | Laoag | Det. E, 28th Inf | | | | | |
| Do | Polo | Det. 43d Inf | | | | 1 | |
| Do | Magdalena | K, 37th Inf | | | | | |
| Do | Near Badoc | Det. G, 12th Inf | | | | | |
| Do | Barrio Uggula | Det. F, 49th Inf | | | | 1 | |
| May 30 | Near Jalang | Band and det. M, 46th Inf | | 3 | | | |
| Do | Siniloan | Det. F, 42d Inf | | 1 | | | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1900. | | | | | | | |
| May 30 | Near Labo | Det. B, 45th Inf | | | | | |
| Do | Near Balamban | Det. M, 44th Inf | | | | | |
| Do | Santo Tomas | Det. K, 34th Inf | | | | | |
| May 31 | Near Gapan | G, 4th Cav | | | | | |
| Do | Near Manaoag | C, 13th Inf | | | | 1 | |
| Do | Balungas | Det. I, 12th Inf | | | | 1 | |
| Do | Lambunao | Det. L, 18th Inf | | | | 2 | |
| June 1 | Near Biac-na-bato | Det. C, 35th Inf | | | | 1 | |
| Do | Barrio Isabong | Det. F, 30th Inf | | | | | |
| Do | Talisay | Det. I, K, 39th Inf | | | | | |
| June 2 | Barrio Mabaling | Det. G, 34th Inf | | | | | |
| June 3 | Catbalogan | L, 43d Inf | | | | | |
| Do | Bulacan Mountain | A, 22d Inf.; C, 34th Inf | 1 | 1 | | | Capt. G. J. Godfrey, 22d Inf., killed. |
| Do | Malunu | Det. H, 16th Inf | | | | 2 | |
| Do | Near Bustos | Det. A, 35th Inf | | | | | |
| Do | Near San Victor | Det. A, 43d Inf | | | | | |
| Do | Nagbrecan | G, 34th Inf | | | | | |
| Do | Barotac Nuevo | C, 26th Inf | | | | 3 | |
| Do | Near Magdalena | Det. E, 11th Cav | | | | | |
| June 4 | Near Biac-na-bato | Det. C, 35th Inf | | | | 1 | |
| Do | Barrio Lauco | G, 3d Inf.; E, 35th Inf | | 1 | | 5 | |
| Do | Near San Manuel | Det. H, 13th Inf | | | | | |
| Do | Balubad | C, D, I, K, L, 35th Inf | | | 1 | 3 | 1st Lieut. Grover Flint, 35th Inf., wounded. |
| June 5 | Near Barotac | C, 26th Inf | | | | | |
| Do | Papaya | Det. A, B, 28th Inf | | | 1 | 1 | Capt. F. F. Crenshaw, 28th Inf., wounded. |
| June 6 | Mina | 1 officer, 1 man, G, 26th Inf., ambushed | | | 1 | | Capt. J. Bordman, jr., 26th Inf., wounded. |
| June 7 | Donsol | A, D, 47th Infantry | | | | | |
| Do | Boa River | Dets. A, B, M, 37th Inf | | | | 1 | |
| Do | Dumangas | Dets. A, B, C, D, 26th Inf | | 1 | | 1 | |
| Do | Biaan Valley | Det. A, 32d Inf | | | | | |
| June 8 | Calbayog | E, G, 43d Inf | | | | | |
| Do | Donsol | A, D, 47th Inf | | | | | |
| Do | Near Talisay | Det. K, 39th Inf | | | | | |
| Do | Near Sibul | C, 34th Inf | | | | | |
| Do | Near San Miguel de Mayumo. | Det. H, 4th Cav.; L, M, 34th Inf | | | | | |
| Do | Near Teres | Det. L, 47th Inf | | | | | |
| June 9 | Cabatuan | H, 26th Inf | | | | | |
| Do | Barauen River | Det. C, 43d Inf | | | | | |
| Do | Near Echague | Det. M, 16th Inf | | 1 | | | |
| June 10 | Anilao | Det. D, 26th Inf | | 1 | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do... | San Isidro | A, B, 22d Inf | | | | | |
| Do... | Near Tingalon | Det. H, 44th Inf | | | | | |
| Do... | Tanauan | A, 43d Inf | | | | | |
| Do... | Masin | H, 18th Inf | | | | | |
| June 11 | Balubad | H, 4th Cav.; E, 1st Art.; E, F, G, H, 3d Inf.; C, D, E, F, G, H, I, 22d Inf.; B, C, D, I, K, L, 35th Inf.; I, L, M, 34th Inf. | | | | | |
| Do... | Balodan | L, 34th Inf | | | | | |
| Do... | Near San Miguel | H and scouts, 41st Inf | | | | | |
| Do... | Santa Cruz | E, L, 11th Cav.; E, 33d Inf | | | | 2 | |
| Do... | Sibul Mountains | C, 34th Inf | | | | | |
| June 12 | Near Caranim | Det. E, G, 43d Inf | | | | | |
| Do... | Layog | H, 18th Inf | | | | | |
| Do... | Guinobatan | Det. D, 11th Cav | | | | | |
| Do... | Near Lambong | Det. G, 11th Cav | | | | | |
| Do... | Near Calbayog | Det. E, 43d Inf | | | | | |
| June 13 | Mexico | E, 41st Inf | | | | | |
| Do... | Catbalogan | L, 43d Inf | | | | | |
| Do... | San Antonio | Det. I, 22d Inf | | | | | |
| Do... | Near Prenca | Det. E, 28th Inf | | | | | |
| Do... | Dagami | C, 43d Inf | | | | | |
| Do... | Marora | Det. B, 11th Cav | | | | | |
| June 14 | Near Tagatay | E, F, G, H, 47th Inf | | 1 | | 1 | |
| Do... | San Domingo | Det. G, 32d Inf | | 1 | | 1 | |
| Do... | Near Santa Rosa | Det. 22d Inf | | | | | |
| Do... | Papaya | G, 4th Cav.; C, I, 34th Inf | | 1 | | 1 | |
| Do... | Near Cagayan | H, I, K, L, M, 40th Inf | | 9 | 2 | 8 | Capts. T. Millar and W. B. Elliott, 40th Inf., wounded. |
| Do... | Near Dumangas | Det. 18th Inf | | 1 | | | |
| Do... | Near Cagayan | Det. K, 40th Inf | | | | 2 | |
| June 15 | Near Barbasa | C, 19th Inf | | | | | |
| Do... | Near Nalupa Nuevo | E, 19th Inf | | | | | |
| Do... | Monte Maradudon | E, 3d Cav.; det. L, 33d Inf | | | | 1 | |
| Do... | Near Guinagaan | Dets. A, D, 47th Inf | | | | | |
| Do... | Mainit | B, 40th Inf | | | | | |
| June 16 | Barbasa | F, 44th Inf.; C, E, 19th Inf | | | | 1 | |
| Do... | Pagsajan | Dets. A, G, 11th Cav | | | | 1 | |
| June 17 | Calbayog | E, G, 43d Inf | | | | | |
| Do... | Near Ligao | Det. I, 47th Inf | | | | | |
| June 18 | Dumangas | Dets. C, L, 26th Inf | | 1 | | | |
| Do... | Calibabagan | Det. E, 16th Inf | | | | | |
| Do... | Near Layog | H, 26th Inf.; det. G, 6th Art | | | | | |
| Do... | Near Guinobatan | Det. B, 11th Cav | | | | 1 | |
| Do... | Near Leon | Det. I, 26th Inf | | | | | |
| June 19 | Antique | L, 19th Inf | | | | | |
| Do... | Manguirin | Det. K, 11th Cav | | | | | |
| Do... | Near Durago | Det. B, 11th Cav | | | | | |
| Do... | Calivo | A, 6th Inf | | | | 1 | |
| June 20 | Near Camarines | F, K, 11th Cav | | | | | |
| Do... | Antique | A, L, 19th Inf | | | | | |
| Do... | Anisloc | Det. F, 47th Inf | | | | 1 | |
| Do... | Minglenilla | Det. M, 19th Inf | | | | 2 | |

K.—*Chronological list of actions, with losses, in the Philippine Islands from February 4, 1899, to June 30, 1900, inclusive*—Continued.

| Date. | Place. | Troops engaged. | Killed. | | Wounded. | | Names of officers killed or wounded. |
|---|---|---|---|---|---|---|---|
| | | | Officers. | Men. | Officers. | Men. | |
| 1900. | | | | | | | |
| June 20 | Near Camalig | Det. I, 47th Inf | | | | | |
| June 21 | Catbalogan | L, 43d Inf | | | | | |
| Do | Monte Paruyan | E, 3d Cav.; G, 12th Inf | | 1 | | 1 | |
| Do | Malaboga | B, 11th Cav | | | | | |
| Do | Near Caranim | Dets. E, G, 43d Inf | | | | | |
| Do | Malaboquin | B, D, 11th Cav | | | | 1 | |
| June 22 | Near Dumangas | F, 18th Inf | | | | | |
| June 23 | Bangued | A, B, C, D, 33d Inf | | | | | |
| Do | Gomain River | Det. I, 32d Inf | | | | 1 | |
| Do | Abra River | Dets. A, B, C, D, 33d Inf | | | | | |
| Do | Near Luisiana | L, 11th Cav.; H, 37th Inf | | | | | |
| Do | Near Lucban | B, 37th Inf | | | | | |
| June 24 | Hilongos | A, 44th Inf | | 2 | | | |
| Do | Catbalogan | L, 43d Inf | | | | | |
| Do | Near Luisiana | M, 37th Inf | | | | | |
| Do | Bulusan | Det. L, 47th Inf | | | | | |
| Do | Dumangas | Det. L, 26th Inf | | | | 1 | |
| Do | Near Ligao | Det. I, 47th Inf | | | | 1 | |
| Do | Sapao | F, 18th Inf | | | | | |
| Do | Near Boao | Det. A, 45th Inf | | | | | |
| Do | Barrio Holang | Det. G, 35th Inf | | | | | |
| Do | Lagonoy | D, 45th Inf | | | | | |
| June 25 | Santa Ana | F, 41st Inf | | | | | |
| June 26 | Catbalogan | L, 43d Inf | | | | | |
| Do | San Quintin | Det. B, D, 33d Inf | | | | | |
| Do | Near Camalig | Det. I, 47th Inf | | | | | |
| Do | Sibalon | L, 19th Inf | | | | | |
| Do | Bangued | A, B, C, D, 33d Inf | | | | | |
| Do | Near San Antonio | Dets. A, E, G, L, 11th Cav.; H, 37th Inf | | | | | |
| June 27 | Camalig | Det. I, 47th Inf | | | | 1 | |
| Do | Mount Bingain | Det. L, 41st Inf | | | | | |
| Do | Near Balanga | Dets. C, D, G, 32d Inf | | | | | |
| Do | Near Barabo | Det. K, 11th Cav | | | | | |
| Do | Sapao River | E, F, 26th Inf | | | | 1 | |
| Do | Near Sorsogon | Det. K, M, 47th Inf | | | | | |
| Do | Lagonoy | Det. 45th Inf | | | | | |
| June 28 | Near Bangued | Det. B, 33d Inf | | | | | |
| Do | Canayan | Det. H, 47th Inf | | | | | |
| Do | Payato | Det. K, 11th Cav | | | | | |
| Do | Hilongos | A, 44th Inf | | | | | |
| Do | Catbalogan | L, 43d Inf | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| June 30 | Bolong | K, 26th Inf | | | | 1 |
| Do | Sinfrozo de la Cruz | Det. E, 35th Inf | | | | |
| Do | Near Indan | Det. E, 46th Inf | | | | |
| Do | Near San Blas | 3 men, I, 26th Inf., ambushed | | 1 | | 2 |
| Do | Nainil | B, 40th Inf | | | | |
| Do | Conowal | Det. 23d Inf | | | | |
| Do | Magaan | Det. 47th Inf | | | | |
| Do | Near Guinobatan | Det. B, 11th Cal | | 1 | | |
| | Total | | 33 | 476 | *a*147 | 2,076 |

*a* Includes 3 acting assistant surgeons wounded.

ADJUTANT-GENERAL'S OFFICE,
*Washington, D. C., October 1, 1900.*

H. C. CORBIN,
*Adjutant-General.*

L.—*Retirements, resignations, deaths, etc., among officers, U. S. Army, since last annual report, and October 1, 1900.*

| Name and rank. | Date |
|---|---|
| RETIRED. | |
| Alden, Charles H., colonel, assistant surgeon-general. | April 28, 1900. |
| Anderson, Thomas M., brigadier-general | Jan. 21, 1900. |
| Brett, James E., captain, Twenty-fourth Infantry | Dec. 23, 1899. |
| Burke, Daniel W., brigadier-general | Oct. 21, 1899. |
| Calef, John H., lieutenant-colonel Third Artillery | Aug. 10, 1900. |
| Carpenter, Gilbert S., brigadier-general | Dec. 26, 1899. |
| Carpenter, Louis H., brigadier-general | Oct. 19, 1899. |
| Clapp, William H., lieutenant-colonel Twenty-first Infantry. | Sept. 7, 1900. |
| Coates, Edwin M., colonel Seventh Infantry | Jan. 29, 1900. |
| Craig, Robert, lieutenant-colonel, Signal Corps | Dec. 1, 1899. |
| Crowell, William H. H., major, Sixth Infantry | Jan. 15, 1900. |
| Evert, Edward, captain, assistant surgeon | April 28, 1900 (as major). |
| Field, Edward, lieutenant-colonel Third Artillery | June 6, 1900. |
| Frank, Royal T., brigadier-general | Oct. 18, 1899. |
| French, William E. P., captain, Second Infantry | Feb. 2, 1900. |
| Frost, Alfred S., major, paymaster | Feb. 14, 1900. |
| Fuger, Frederick, major, Fourth Artillery | June 18, 1900. |
| Gerlach, William, major, Twelfth Infantry | Nov. 15, 1899. |
| Hall, Henry H., chaplain | Oct. 25, 1899. |
| Hamner, William H., major, paymaster | Jan. 18, 1900. |
| Hartz, Wilson T., lieutenant-colonel Twenty-second Infantry. | May 31, 1900. |
| Kell, William H., captain, Twenty-second Infantry. | Dec. 15, 1899 (as major). |
| Kellogg, Edgar R., brigadier-general | Dec. 16, 1899. |
| Koerper, Egon A., lieutenant-colonel, deputy surgeon-general. | Feb. 21, 1900. |
| Lee, James G. C., colonel, assistant quartermaster-general. | Aug. 12, 1900. |
| Mackey, John O., captain, Third Cavalry | July 10, 1900. |
| Macomber, John H., chaplain | Feb. 17, 1900. |
| Mahan, Frederick A., major, Engineer Corps | April 2, 1900. |
| Merritt, Wesley, major-general | June 16, 1900. |
| Munn, Curtis E., major, surgeon | Feb. 2, 1900. |
| Nickerson, James D., captain, Seventeenth Infantry | July 9, 1900. |
| O'Connor, Stephen, captain, Twenty-third Infantry | April 18, 1900. |
| Pennington, Alexander C. M., brigadier-general | Oct. 17, 1899. |
| Potter, Carroll H., lieutenant-colonel Twenty-second Infantry. | June 9, 1900. |
| Sage, George E., captain, Sixth Artillery | April 5, 1900. |
| Scantling, John C., major, Second Artillery | Oct. 1, 1900. |
| Smith, Oskaloosa M., major, commissary of subsistence. | Feb. 12, 1900. |
| Stetson, Frederic T., first lieutenant, Third Infantry. | May 25, 1900. |
| Summerhayes, John W., major, quartermaster | Jan. 6, 1900. |
| Tilton, Henry R., lieutenant-colonel, deputy surgeon-general. | Feb. 1, 1900. |
| Viele, Charles D., colonel Fourth Cavalry | Jan. 23, 1900. |
| Volkmar, William J., colonel, assistant adjutant-general. | April 28, 1900. |
| Waring, John K., captain, Second Infantry | Nov. 15, 1899 (as major). |
| Wheeler, Joseph, brigadier-general | Sept. 10, 1900. |
| Whittemore, James M., colonel, Ordnance Department. | March 5, 1900. |
| Williston, Edward B., colonel Sixth Artillery | July 15, 1900. |
| RESIGNED. | |
| Copp, William M., second lieutenant, Sixth Artillery. | Sept. 1, 1900. |
| Foster, Charles S., second lieutenant, Ninth Infantry. | Jan. 24, 1900. |
| Harman, John A., first lieutenant, Sixth Cavalry | March 1, 1900. |
| Heyl, Ashton B., captain, assistant surgeon | Feb. 28, 1900. |
| Hill, Louis E., first lieutenant, Fourth Infantry | Sept. 20, 1900. |
| DISMISSED. | |
| Martin, Edward H., second lieutenant, Fifth Artillery. | Aug. 10, 1900 |
| Shields, David H., chaplain | Jan. 31, 1900. |
| Van Liew, Frederick T., captain, Second Infantry | Nov. 20, 1899 |
| DROPPED FOR DESERTION. | |
| Hazzard, Samuel O., first lieutenant, First Artillery. | May 31, 1900. |

L.—*Retirements, resignations, deaths, etc.*—Continued.

| Name and rank. | Date. |
|---|---|
| DROPPED AS MISSING (SUPPOSED TO BE DEAD). | |
| Rockefeller, Charles M., major, Sixth Infantry | May 12, 1900. |
| COMMISSION EXPIRED BY CONSTITUTIONAL LIMITATION. | |
| Rash, Otway W., first lieutenant, assistant surgeon. | June 7, 1900. |
| DEATHS, OFFICERS ON THE ACTIVE LIST. | |
| Ayres, James C., captain, Ordnance Department | Dec. 8, 1899, Washington, D. C. |
| Benyaurd, William H. H., lieutenant-colonel, Corps Engineers. | Feb. 7, 1900, New York, N. Y. |
| Boutelle, Henry M., second lieutenant, Third Artillery. | Nov. 2, 1899, killed in action near Aliaga, P. I. |
| Brereton, John J., captain, Twenty-fourth Infantry (lieutenant-colonel, Thirty-third Volunteers). | Dec. 2, 1899, Santo Tomas, Luzon, P. I. |
| Cartwright, George S., captain, Twenty-fourth Infantry (major and quartermaster, volunteers). | Sept. 23, 1900, Havana, Cuba. |
| Cheney, Ward, first lieutenant, Fourth Infantry | Jan. 7, 1900, killed in action near Imus, P. I. |
| Cooper, George A., second lieutenant, Fifteenth Infantry. | Sept. 17, 1900, killed in action at Mavitac, P. I. |
| Draper, Paul, second lieutenant, Twenty-second Infantry. | June 28, 1900, near San Antonio, P. I. |
| Edmunds, Frank H., major, First Infantry | June 18, 1900, Quemados, Cuba. |
| Geiger, William C., first lieutenant, Fourteenth Infantry (captain squad Philippine Cavalry). | July 2, 1900, Manila, P. I. |
| Godfrey, George J., captain, Twenty-Second Infantry. | June 3, 1900, killed in action, San Miguel de Mayumo, P. I. |
| Guthrie, John B., major, Fifteenth Infantry | Jan. 12, 1900, Buffalo, N. Y. |
| Henry, Guy V., brigadier-general | Oct. 27, 1899, New York, N. Y. |
| Higley, Brainard S., jr., first lieutenant, assistant surgeon. | Feb. 3, 1900, Corregidor, P. I. |
| Hollis, Magnus O., captain, Fourth Infantry | Nov. 15, 1899, Manila, P. I. |
| Howard, Guy, captain, Quartermaster's Department (major and quartermaster, volunteers). | Oct. 22, 1899, killed in action, near Arayat, P. I. |
| Keyes, Maxwell, second lieutenant, Third Infantry. | Nov. 24, 1899, killed in action, Ildefonso, P. I. |
| Koehler, Edgar F., first lieutenant, Ninth Infantry. | Mar. 4, 1900, killed in action, Tinuba, P. I. |
| Lawton, Henry W., colonel, Inspector-General's Department (major-general U. S. Volunteers). | Dec. 19, 1899, killed in action, San Mateo, P. I. |
| Ledyard, Augustus C., first lieutenant, Sixth Infanty. | Dec. 8, 1899, killed in action, La Granja, Negros, P. I. |
| Liscum, Emerson H., colonel, Ninth Infantry | July 13, 1900, killed in action, Tientsin, China. |
| Little, John, captain, commissary of subsistence | July 28, 1900, Governors Island, N. Y. |
| McGrath, Hugh J., captain, Fourth Cavalry | Nov. 7, 1899, Manila, P. I., of wounds received in action at Novaleta, P. I., Oct. 8, 1899. |
| McQuiston, Charles, captain, Fourth Infantry | Sept. 15, 1900, Bacoor, P. I. |
| Meade, Francis K., first lieutenant, Twenty-first Infantry. | Sept. 22, 1900, Manila, P. I. |
| Mitchell, David D., captain, Fifteenth Infantry | Sept. 17, 1900, killed in action at Mavitac, P. I. |
| Munton, Charles H., first lieutenant, Twelfth Infantry. | Feb. 11, 1900, at sea, en route from Manila, P. I. |
| Murphy, William L., first lieutenant, Twenty-fourth Infantry (captain, Thirty-ninth Volunteers). | Aug. 14, 1900, killed in action, Tanauan, P. I. |
| Ostheim, Louis, captain, First Artillery | Apr. 8, 1900, Chicago, Ill. |
| Reilly, Henry J., captain, Fifth Artillery | Aug. 15, 1900, killed in action, Pekin. China. |
| Robinson, Samuel Q., major surgeon | Nov. 6, 1899, Hot Springs, Ark. |
| Schenck, William T., first lieutenant, Twenty-fifth Infantry. | Jan. 29, 1900, killed in action near Subig, P. I. |
| Smith, Charles M., second lieutenant, Eighteenth Infantry. | Nov. 22, 1899, Iloilo, Panay, P. I., of wounds received in action at Pavia, P. I., Nov. 21, 1899. |
| Smith, Edmund D., captain, Nineteenth Infantry | Feb. 5, 1900, Sogod, Cebu, P. I., of wounds received in action near Sogod, P. I., Feb. 4, 1900. |
| Spurgin, David G., first lieutenant, Twenty-first Infantry. | July 29, 1900, Manila, P. I. |
| Steele, Charles L., captain, Eighteenth Infantry | Jan. 18, 1900, Fort Bayard, N. M. |
| Taylor, Edward, first lieutenant, Twelfth Infantry. | Dec. 26, 1899, Bautista, P. I. |
| Wallace, Robert B., first lieutenant, Second Cavalry (colonel Thirty-seventh Volunteers). | Mar. 13, 1900, Fort Huachuca, Ariz., of wounds received in action at Caloocan, P. I., Feb. 10, 1899. |
| Warwick, Oliver B., captain, Eighteenth Infantry | Nov. 26, 1899, killed in action, Passi, Panay, P. I. |
| Way, Henry N., second lieutenant, Fourth Infantry. | Aug. 28, 1900, killed in action, Villavieja, P. I. |
| Whitney, Folliot A., major, Sixth Infantry | Aug. 11, 1900, Silay, Negros, P. I. |
| Williams, William H., first lieutenant, Twelfth Infantry. | Nov. 25, 1899, Philadelphia, Pa., of wounds received in action near Angeles, P. I., Aug. 16, 1899. |
| DEATHS, OFFICERS ON THE RETIRED LIST. | |
| Averell, William W., captain | Feb. 3, 1900, Bath, Steuben County, N. Y. |
| Bliss, Zenas R., major-general | Jan. 2, 1900, Washington, D. C. |

L.—*Retirements, resignations deaths, etc.*—Continued.

| Name and rank. | Date. |
|---|---|
| DEATHS, OFFICERS ON THE RETIRED LIST—cont'd. | |
| Brown, Andrew M., captain | Dec. 29, 1899, San Francisco, Cal. |
| Casey, James S., colonel | Dec. 24, 1899, New York, N. Y. |
| Connolly, Thomas, captain | May 28, 1900, Lorin, Cal. |
| Crawford, Alexander McL., first lieutenant | Oct. 19, 1899, Hamptonburg, N. Y. |
| Elderkin, William A., colonel | Jan. 1, 1900, Middletown, N. Y. |
| Elliott, George H., colonel | Mar. 23, 1900, Marmion, Va. |
| Gallupe, George S., captain | Apr. 5, 1900, Pittsburg, Pa. |
| Gelray, Joseph W., captain | Mar. 10, 1900, Boston, Mass. |
| Goodloe, Archibald H., captain | Nov. 27, 1899, Lexington, Ky. |
| Goodwin, William P., captain | Dec. 13, 1899, Madison, Wis. |
| Gross, Louis H., first lieutenant | Sept. 2, 1900, Eldorado, Ill. |
| Hamilton, John, colonel | July 15, 1900, Brooklyn, N. Y. |
| Hammond, William A., brigadier-general | Jan. 5, 1900, Washington, D. C. |
| Huntington, David L., lieutenant-colonel | Dec. 20, 1899, Rome, Italy. |
| Johnson, Lewis, major | Sept. 23, 1900, Jalapa, Mexico. |
| King, Albert D., captain | Apr. 14, 1900, Lancaster, Onio. |
| Lester, Charles H., captain | Oct. 27, 1899, New York, N. Y. |
| Lewis, John R., colonel | Feb. 8, 1900, Chicago, Ill. |
| Lyman, Wyllys, major | Feb. 1, 1900, Philadelphia, Pa. |
| McBlair, John H., first lieutenant | Dec. 3, 1899, Washington, D. C. |
| Palmer, Innis N., colonel | Sept. 10, 1900, Chevy Chase, Md. |
| Prime, Frederick E., major | Aug, 12, 1900, Litchfield, Conn. |
| Roe, Charles F., captain | July 17, 1900, Horseheads, N. Y. |
| Russell, Albert J., captain | Apr. 15, 1900, Sierra Madre, Cal. |
| Sharp, Frederick D., captain | Sept. 27, 1900, Kansas City, Mo. |
| Snyder, James A., captain | June 28, 1900, Washington, D. C. |
| Stanton, Thaddeus H., brigadier-general | Jan. 23, 1900, Omaha, Nebr. |
| Stiles, Daniel F., captain | Sept. 11, 1900, Oklahoma, O. T. |
| Tisdall, William N., captain | Nov. 18, 1899, Wayne, Pa. |
| Tower, Z. B., colonel | Mar. 20, 1900, Cohasset, Mass. |
| Towle, George F., captain | June 21, 1900, London, England. |
| Upham, Frank K., captain | Oct. 17, 1899, Santa Monica, Cal. |
| Wells, Daniel T., major | Nov. 27, 1899, Detroit, Mich. |
| Wilkins, John D., colonel | Feb. 20, 1900, Washington, D. C. |

*Officers of the United States Volunteers who have died between July 1, 1899, and October 1, 1900.*

| Name and rank. | Date. |
|---|---|
| Armstrong, Frank C., major-surgeon, Thirty-second Infantry. | Dec. 4, 1899, Manila, P. I. |
| Bentley, George H., captain, Forty-seventh Infantry. | Aug. 28, 1900, Camalig, P. I., of wounds received in action near Camalig, Aug. 21, 1900. |
| Bowman, Daniel T., first lieutenant, Thirty-seventh Infantry. | Jan. 9, 1900, Manila, P. I. |
| Brown, William, captain, Forty-fifth Infantry | Aug. 17, 1900, killed in action, Salvacien, P. I. |
| Burchard, Easton, first lieutenant, assistant surgeon, Fortieth Infantry. | Sept. 2, 1900, transport Grant, Nagasaki, Japan. |
| Cilley, Jonathan, first lieutenant, Forty-third Infantry. | June 13, 1900, Manila, P. I. |
| Crenshaw, Frank F., captain, Twenty-eighth Infantry. | Aug. 28, 1900, Alanta, Ga., of wounds received in action at Papaya, P. I., June 5, 1900. |
| Danner, James D., second lieutenant, Twenty-eighth Infantry. | Sept. 27, 1900, near Manila P. I. |
| Davis, Julian L., second lieutenant, Thirty-sixth Infantry. | Nov. 11, 1899, killed in action near Bamban, P. I. |
| Edmonston, Raphael A., first lieutenant, assistant surgeon, Thirty-fourth Infantry. | June 2, 1900, Manila, P. I. |
| Evens, John H., first lieutenant, Forty-third Infantry. | May 11, 1900, killed in action, Matagiano, Samar, P. I. |
| Fernald, Roy L., second lieutenant, Twenty-sixth Infantry. | Sept. 1, 1900, Jalaur River, near Pototan, P. I. |
| French, Charles, captain, Thirty-sixth Infantry | Oct. 31, 1899, Manila, P. I., of wounds received in action at Florida Blanca, P. I., Oct. 29, 1899. |
| Galleher, John B., first lieutenant, Fortieth Infantry. | Feb. 23, 1900, transport Tartar, San Miguel Bay, P. I., of wounds received in action at Libmanan, P. I., Feb. 20, 1900. |
| Heatwole, Joseph H., major, commissary of subsistence. | July 6, 1899, Santiago, Cuba. |
| Huston, Robert B., captain, Forty-seventh Infantry. | July 6, 1900, Manila, P. I. |
| Jackson, George L., second lieutenant, Forty-seventh Infantry. | May 21, 1900, Manila, P. I. |

*Officers of the United States Volunteers who have died, etc.*—Continued.

| Name and rank. | Date. |
|---|---|
| Langworthy, Samuel R., captain, Thirty-fifth Infantry. | Feb. 21, 1900, Baliuag, Luzon, P. I. |
| Lee, Orison P., captain, Forty-fifth Infantry | June 10, 1900, near Albay, P. I. |
| Logan, John A., major, Thirty-third Infantry | Nov. 11, 1899, killed in action, San Jacinto, P. I. |
| Luna, Maximiliano, first lieutenant, Thirty-fourth Infantry. | Nov. 15, 1889, Agno River, P. I. |
| McLaughlin, James B., second lieutenant, signal officer. | July 6, 1899, Santiago, Cuba. |
| McNabb, Lewis M., captain, Forty-ninth Infantry | Nov. 7, 1899, Jefferson Barracks, Mo. |
| Toncray, James P., first lieutenant, Thirty-sixth Infantry. | Feb. 7, 1900, Manila, P. I. |
| Wagner, Max, second lieutenant, Twenty-sixth Infantry. | Oct. 1, 1900, killed in action near Pavia, P. I. |
| Waugh, John R., second lieutenant, Thirty-ninth Infantry. | Feb. 27, 1900, Manila, P. I. |
| Weber, Louis P., second lieutenant, Forty-second Infantry. | Mar. 9, 1900, Calamba, P. I. |
| Webster, Horace, first lieutenant, Forty-second Infantry. | July 7, 1900, Manila, P. I. |
| White, Grant A., first lieutenant, Thirty-third Infantry. | Apr. 10, 1900, Angaque, P. I. |
| Wing, Eugene G., second lieutenant, Thirty-sixth Infantry. | Jan. 24, 1900, Manila, P. I. |

H. C. CORBIN,
*Adjutant-General, U. S. A.*

ADJUTANT-GENERAL'S OFFICE,
*Washington, D. C., October 1, 1900.*

## M.—*Deaths in the Philippine Islands between February 4, 1899, and June 30, 1900.*

| | Killed. | | Of wounds. | | Disease. | | Accident. | | Drowned. | | Suicide. | | Murder or homicide. | | Total. | | Wounded | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. | Officers. | Enlisted men. |
| Regulars | 18 | 179 | 5 | 57 | 8 | 606 | 1 | 29 | 1 | 76 | 2 | 16 | .... | 16 | 35 | 979 | 42 | 791 |
| Volunteers | 15 | 297 | 4 | 104 | 11 | 455 | ... | 20 | 3 | 83 | 4 | 7 | .... | 4 | 37 | 920 | 102 | 1,285 |
| Grand total. | 33 | 476 | 9 | 161 | 19 | 1,061 | 1 | 49 | 4 | 109 | 6 | 23 | .... | 20 | 72 | 1,899 | 144 | 2,076 |

H. C. CORBIN,
*Adjutant-General, United States Army.*

ADJUTANT-GENERAL'S OFFICE,
*Washington, D. C., October 1, 1900.*

N.—*Table showing strength of volunteer forces called into service of the United States dur*

| Organization. | Mustered in. | | Mustered out. | |
|---|---|---|---|---|
| | Date. | Place. | Date. | Place. |
| Major-generals | | | | |
| Brigadier-generals | | | | |
| Adjutant-General's Department | | | | |
| Inspector-General's Department | | | | |
| Judge-Advocate-General's Department | | | | |
| Quartermaster-General's Department | | | | |
| Subsistence Department | | | | |
| Medical Department | | | | |
| Pay Department | | | | |
| Engineer Department | | | | |
| Ordnance Department | | | | |
| Signal Corps | | | | |
| Total general officers and staff | | | | |
| Alabama Volunteer Infantry: | | | | |
| First | May 9-24, 1898 | Mobile, Ala | Oct. 31, 1898 | Birmingham, Ala |
| Second | May 16-June 14, 1898. | do | do | Montgomery, Ala |
| Third[1] | June 4-Aug. 5, 1898. | do | Mar. 20, 1899 | Anniston, Ala |
| Arkansas Volunteer Infantry: | | | | |
| First | May 14-20, 1898 | Little Rock, Ark | Oct. 25, 1898 | Little Rock, Ark |
| Second | May 14-25, 1898 | do | Feb. 25, 1899 | Anniston, Ala |
| California Volunteer Infantry: | | | | |
| First | May 6, 1898 | San Francisco, Cal. | Sept. 21, 1899 | San Francisco, Cal. |
| Sixth | May 11, 1898 | do | Dec. 15, 1898 | Fort Point, Cal |
| Seventh | May 9, 1898 | do | Dec. 2, 1898 | Los Angeles, Cal |
| Eighth | July 6-9, 1898 | Fruitville, Cal | Feb. 6, 1899 | California and Washington. |
| California Volunteer Artillery: | | | | |
| Field and staff | May 9, 1898 | San Francisco, Cal. | Sept. 21, 1899 | San Francisco, Cal. |
| Battery A | do | do | do | do |
| Battery B | do | do | Jan. 30, 1899 | Angel Island, Cal |
| Battery C | May 10, 1898 | do | Feb. 3, 1899 | Fort Canby, Wash |
| Battery D | do | do | Sept. 21, 1899 | San Francisco, Cal. |
| Colorado: | | | | |
| First Volunteer Infantry. | May 1, 1898 | Denver, Colo | Sept. 8, 1899 | do |
| First Volunteer Battery. | July 18, 1898 | do | Nov. 7, 1898 | Fort Hancock, N.J. |
| Connecticut Volunteer Infantry: | | | | |
| First | May 17-July 14, 1898. | Connecticut | Oct. 31, 1898 | Hartford, Conn |
| Third | July 2-6, 1898 | Niantic, Conn | Mar. 20, 1899 | Savannah, Ga |
| Connecticut Volunteer Artillery: | | | | |
| Light Battery A | May 19, 1898 | do | Oct. 25, 1898 | New Haven, Conn. |
| Heavy Battery B | do | do | Dec. 20, 1898 | Bridgeport, Conn |
| Heavy Battery C | do | do | Oct. 29, 1898 | New Haven, Conn. |
| District of Columbia Volunteer Infantry: | | | | |
| First | May 10-17, 1898 | Washington, D. C | Nov. 20, 1898 | Washington, D. C |

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[1] Colored troops.

*ing the war with Spain, with losses from all causes, etc., as shown by muster-out rolls.*

| Strength at muster in. | | Strength at muster out. | | Total number accounted for on muster-out roll. | | Losses while in service. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Officers. | | | | | | |
| | | | | | | | | | Died. | | | |
| Officers. | Men. | Officers. | Men. | Officers. | Men. | Promoted or transferred. | Resigned or discharged. | Dismissed. | Killed in action. | Of wounds. | Disease. | Accident. |
| 25 | ...... | 4 | ...... | 25 | ...... | 8 | 13 | ...... | ...... | ...... | ...... | ...... |
| 106 | ...... | 16 | ...... | 106 | ...... | 8 | 80 | ...... | ...... | ...... | 2 | ...... |
| 125 | ...... | 10 | ...... | 125 | ...... | 6 | 108 | ...... | ...... | ...... | 1 | ...... |
| 41 | ...... | 10 | ...... | 41 | ...... | 3 | 27 | ...... | ...... | ...... | 1 | ...... |
| 11 | ...... | 5 | ...... | 11 | ...... | ...... | 6 | ...... | ...... | ...... | ...... | ...... |
| 164 | ...... | 87 | ...... | 164 | ...... | ...... | 74 | ...... | 1 | ...... | 2 | ...... |
| 120 | ...... | 20 | ...... | 120 | ...... | ...... | 95 | ...... | 1 | ...... | 3 | ...... |
| 143 | ...... | 34 | ...... | 143 | ...... | ...... | 108 | ...... | ...... | ...... | 1 | ...... |
| 93 | ...... | 31 | ...... | 93 | ...... | 1 | 60 | ...... | ...... | ...... | 1 | ...... |
| 28 | ...... | ...... | ...... | 28 | ...... | 2 | 26 | ...... | ...... | ...... | ...... | ...... |
| 26 | ...... | ...... | ...... | 26 | ...... | 2 | 23 | ...... | ...... | ...... | 1 | ...... |
| 128 | 1,329 | 37 | ...... | 128 | 1,329 | 3 | 83 | ...... | 1 | ...... | 3 | 1 |
| *a* 1,010 | 1,329 | *a* 254 | ...... | 1,010 | 1,329 | 33 | 703 | ...... | 3 | ...... | 15 | 1 |
| 48 | 941 | 49 | 1,069 | 55 | 1,596 | 3 | 2 | ...... | ...... | ...... | 1 | ...... |
| 47 | 935 | 49 | 926 | 50 | 1,090 | ...... | 1 | ...... | ...... | ...... | ...... | ...... |
| 46 | 1,185 | 46 | 992 | 58 | 1,178 | ...... | 7 | ...... | ...... | ...... | ...... | ...... |
| 46 | 966 | 46 | 1,227 | 48 | 1,421 | ...... | 2 | ...... | ...... | ...... | ...... | ...... |
| 45 | 968 | 46 | 822 | 60 | 1,307 | ...... | 13 | ...... | ...... | ...... | 1 | ...... |
| 51 | 986 | 50 | 999 | 71 | 1,317 | ...... | 20 | ...... | ...... | 1 | ...... | ...... |
| 31 | 641 | 31 | 591 | 34 | 858 | ...... | 8 | ...... | ...... | ...... | ...... | ...... |
| 50 | 979 | 50 | 1,169 | 52 | 1,304 | ...... | 2 | ...... | ...... | ...... | ...... | ...... |
| 35 | 1,250 | 46 | 1,211 | 49 | 1,300 | ...... | 3 | ...... | ...... | ...... | ...... | ...... |
| 3 | 1 | 3 | 1 | 4 | 1 | ...... | 1 | ...... | ...... | ...... | ...... | ...... |
| 4 | 146 | 4 | 137 | 6 | 207 | ...... | 2 | ...... | ...... | ...... | ...... | ...... |
| 4 | 146 | 4 | 168 | 6 | 200 | ...... | 2 | ...... | ...... | ...... | ...... | ...... |
| 4 | 146 | 4 | 176 | 4 | 200 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 4 | 146 | 4 | 135 | 6 | 200 | ...... | 2 | ...... | ...... | ...... | ...... | ...... |
| 46 | 970 | 46 | 938 | 67 | 1,261 | 7 | 13 | ...... | 1 | ...... | ...... | ...... |
| 3 | 106 | 3 | 103 | 3 | 106 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 42 | 798 | 45 | 1,230 | 48 | 1,265 | ...... | 3 | ...... | ...... | ...... | ...... | ...... |
| 45 | 1,232 | 45 | 1,105 | 61 | 1,291 | ...... | 16 | ...... | ...... | ...... | ...... | ...... |
| 5 | 120 | 5 | 157 | 5 | 172 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 4 | 146 | 4 | 174 | 4 | 203 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 4 | 140 | 4 | 184 | 6 | 196 | ...... | 1 | ...... | ...... | ...... | 1 | ...... |
| 49 | 922 | 49 | 810 | 58 | 987 | ...... | 3 | ...... | ...... | ...... | 1 | ...... |

N.—*Table showing strength of volunteer forces called into service of the United States during*

| Organization | Losses while in service. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Officers. | | | | Enlisted men. | | | | | | | | | | |
| | Died. | | | Total. | Transferred. | Discharged. | | | Died. | | | | | | |
| | Drowned. | Suicide. | Murdered. | | | Disability. | By sentence of general court-martial. | By order. | Killed in action. | Of wounds received in action. | Of disease. | Accident. | Drowned. | Suicide. | Murdered or homicide. |
| Major-generals | .... | .... | .... | 21 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Brigadier-generals | .... | .... | .... | 90 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Adjutant-General's Department | .... | .... | .... | 115 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Inspector-General's Department | .... | .... | .... | 31 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Judge-Advocate-General's Department | .... | .... | .... | 6 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Quartermaster-General's Department | .... | .... | .... | 77 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Subsistence Department | .... | 1 | .... | 100 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Medical Department | .... | .... | .... | 109 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Pay Department | .... | .... | .... | 62 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Engineer Department | .... | .... | .... | 28 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Ordnance Department | .... | .... | .... | 26 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Signal Corps | .... | .... | .... | 91 | ...... | 9 | .... | 1,297 | .... | .... | 19 | 3 | .... | .... | .... |
| Total general officers and staff | .... | 1 | .... | 756 | ...... | 9 | .... | 1,297 | .... | .... | 19 | 3 | .... | .... | .... |
| Alabama Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 6 | 391 | 31 | .... | 38 | .... | .... | 15 | .... | .... | .... | .... |
| Second | .... | .... | .... | 1 | 19 | 35 | .... | 38 | .... | .... | 15 | 2 | 1 | .... | .... |
| Third[1] | .... | .... | .... | 7 | ...... | 12 | 4 | 71 | .... | .... | 7 | 1 | .... | .... | 3 |
| Arkansas Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 2 | 76 | 55 | .... | 19 | .... | .... | 22 | 2 | .... | .... | .... |
| Second | .... | .... | .... | 14 | 59 | 60 | 2 | 294 | .... | .... | 27 | .... | .... | .... | .... |
| California Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 21 | 61 | 43 | 1 | 170 | 8 | 1 | 24 | 2 | 1 | .... | .... |
| Sixth | .... | .... | .... | 3 | 7 | 23 | .... | 230 | .... | .... | 3 | .... | .... | 1 | .... |
| Seventh | .... | .... | .... | 2 | 10 | 9 | .... | 91 | .... | .... | 20 | .... | .... | .... | .... |
| Eighth | .... | .... | .... | 3 | 16 | 36 | .... | 21 | .... | .... | 7 | .... | .... | 1 | 1 |
| California Volunteer Artillery: | | | | | | | | | | | | | | | |
| Field and staff | .... | .... | .... | 1 | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Battery A | .... | .... | .... | 2 | 4 | 8 | 8 | 45 | .... | .... | 3 | .... | .... | .... | .... |
| Battery B | .... | .... | .... | 2 | 2 | 8 | .... | 8 | .... | .... | ...... | .... | .... | .... | .... |
| Battery C | .... | .... | .... | ...... | 2 | 9 | 8 | 1 | .... | .... | 1 | .... | .... | .... | .... |
| Battery D | .... | .... | .... | 2 | 2 | 9 | .... | 49 | .... | .... | 2 | .... | .... | .... | .... |
| Colorado: | | | | | | | | | | | | | | | |
| First Volunteer Infantry. | .... | .... | .... | 21 | 32 | 53 | 5 | 195 | 5 | 6 | 22 | .... | 1 | 1 | .... |
| First Volunteer Battery. | .... | .... | .... | ...... | ...... | ...... | .... | 3 | .... | .... | ...... | .... | .... | .... | .... |
| Connecticut Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 3 | 3 | 6 | .... | 5 | .... | .... | 18 | .... | .... | .... | .... |
| Third | .... | .... | .... | 16 | 8 | 9 | 11 | 92 | .... | .... | 15 | .... | .... | .... | .... |
| Connecticut Volunteer Artillery: | | | | | | | | | | | | | | | |
| Light Battery A | .... | .... | .... | ...... | 1 | 5 | .... | 8 | .... | .... | 1 | .... | .... | .... | .... |
| Heavy Battery B | .... | .... | .... | ...... | 1 | 2 | .... | 25 | .... | .... | ...... | .... | .... | .... | .... |
| Heavy Battery C | .... | .... | .... | 2 | ...... | 2 | 1 | 2 | .... | .... | 4 | .... | .... | .... | .... |
| District of Columbia Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 4 | 32 | 8 | .... | 65 | .... | .... | 22 | .... | .... | .... | .... |

[1] Colored troops.

*the war with Spain, with losses from all causes, etc., as shown by muster-out rolls*—Cont'd.

| Losses while in service. | | Memoranda. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Enlisted men. | | Wounded | | Service beyond the United States. | | | | |
| | | | | Place. | Date. | | | |
| Deserted. | Total. | Officers. | Enlisted men. | Where. | Leaving the United States. | Arrival in foreign country. | Leaving foreign country. | Returned to the United States. |
| | | | | | | | | |
| | | 2 | | | | | | |
| | | 1 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | 1 | | | | | | |
| | | 1 | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 1 | 1,329 | | | | | | | |
| 1 | 1,329 | | | | | | | |
| 32 | 507 | | | | | | | |
| 54 | 164 | | | | | | | |
| 88 | 186 | | | | | | | |
| 20 | 194 | | | | | | | |
| 43 | 485 | | | | | | | |
| 7 | 318 | 3 | 45 | Philippine Islds | May 25, 1898 | June 30, 1898 | July 26, 1899 | Aug. 24, 1899 |
| 3 | 267 | | | | | | | |
| 5 | 135 | | | | | | | |
| 7 | 89 | | | | | | | |
| | | | | Philippine Islds | Oct. 19, 1898 | Nov. 22, 1898 | July 26, 1899 | Aug. 24, 1899 |
| 7 | 70 | | | do | do | do | do | do |
| 14 | 32 | | | | | | | |
| 8 | 24 | | | | | | | |
| 3 | 65 | | 2 | Philippine Islds | Oct. 17, 1898 | Nov. 21, 1898 | July 26, 1899 | Aug. 24, 1899 |
| 3 | 323 | 4 | 37 | do | June 15, 1898 | July 16, 1898 | July 17, 1899 | Aug. 16, 1899 |
| | 3 | | | | | | | |
| 3 | 35 | | | | | | | |
| 51 | 186 | | | | | | | |
| | 15 | | | | | | | |
| 1 | 29 | | | | | | | |
| 3 | 12 | | | | | | | |
| | 127 | | | Cuba | July 6, 1898[1] | July 9, 1898[1] | Aug. 23, 1898[1] | Aug. 28, 1898[1] |

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[1] Company H sailed to Porto Rico July 15, 1898; arrived July 25, 1898; sailed from Porto Rico September 8, 1898; arrived New York, September 16, 1898.

N.—*Table showing strength of volunteer forces called into service of the United States during*

| Organization. | Mustered in. | | Mustered out. | |
|---|---|---|---|---|
| | Date. | Place. | Date. | Place. |
| Delaware Volunteer Infantry: | | | | |
| First[1] | May 9-19, 1898 | Middletown, Del | Nov. 16, 1898 | Wilmington, Del |
| Do.[2] | do | do | Dec. 19, 1898 | do |
| Florida Volunteer Infantry: | | | | |
| First[3] | May 20-25, 1898 | Tampa, Fla | Dec. 3, 1898 | Tallahassee, Fla |
| Do.[4] | do | do | Jan. 27, 1899 | Huntsville, Ala |
| Georgia Volunteer Infantry: | | | | |
| First | May 11-14, 1898 | Griffin, Ga | Nov. 18, 1898 | Macon, Ga |
| Second | do | do | Nov. 22-Dec. 8, 1898. | Georgia |
| Third | Aug. 24, 1898 | do | Apr. 22, 1899 | Augusta, Ga |
| Georgia Light Artillery: | | | | |
| Batteries A and B | May 13-15, 1898 | do | Oct. 17, 1898 | Griffin, Ga |
| Idaho Volunteer Infantry: | | | | |
| First | May 7-18, 1898 | Boise, Idaho | Sept. 25, 1899 | San Francisco, Cal. |
| Illinois Volunteer Infantry: | | | | |
| First | May 13, 1898 | Springfield, Ill | Nov. 17, 1898 | Chicago, Ill |
| Second | May 16, 1898 | do | Apr. 26, 1899 | Augusta, Ga |
| Third | May 7-10, 1898 | do | Jan. 13-24, 1899. | Illinois |
| Fourth | May 19-20, 1898 | do | May 2, 1899 | Augusta, Ga |
| Fifth | May 4-9, 1898 | do | Oct. 16, 1898 | Springfield, Ill |
| Sixth | May 11, 1898 | do | Nov. 25, 1898 | do |
| Seventh | May 18, 1898 | do | Oct. 20, 1898 | Chicago, Ill |
| Eighth[5] | July 12-21, 1898 | do | Apr. 3, 1899 | do |
| Ninth | July 4-11, 1898 | do | May 20, 1899 | Augusta, Ga |
| Illinois Volunteer Cavalry: | | | | |
| First | May 20-21, 1898 | do | Oct. 11, 1898 | Fort Sheridan, Ill |
| Illinois Light Artillery: | | | | |
| Battery A | May 12, 1898 | Springfield, Ill | Nov. 25, 1898 | Danville, Ill |
| Indiana Volunteer Infantry: | | | | |
| One hundred and fifty-seventh. | May 10, 1898 | Indianapolis, Ind | Nov. 1, 1898 | Indianapolis, Ind |
| One hundred and fifty-eighth. | do | do | Nov. 4, 1898 | do |
| One hundred and fifty-ninth. | May 12, 1898 | do | Nov. 23, 1898 | do |
| One hundred and sixtieth. | do | do | Apr. 25, 1899 | Savannah, Ga |
| One hundred and sixty-first. | July 11-13, 1898 | do | Apr. 30, 1899 | do |
| First[5] (Companies A and B). | July 15, 1898 | do | Jan. 20, 1899 | Chickamauga, Ga |
| Indiana Volunteer Batteries: | | | | |
| Twenty-seventh | May 10, 1898 | do | Nov. 25, 1898 | Indianapolis, Ind |
| Twenty-eighth | May 12, 1898 | do | Oct. 31, 1898 | do |
| Iowa Volunteer Infantry: | | | | |
| Forty-ninth | June 2, 1898 | Des Moines, Iowa | May 13, 1899 | Savannah, Ga |
| Fiftieth | May 17-18, 1898 | do | Nov. 30, 1898 | Des Moines, Iowa |
| Fifty-first | May 30, 1898 | do | Nov. 2, 1899 | San Francisco, Cal. |
| Fifty-second | May 25, 1898 | do | Oct. 30, 1898 | Des Moines, Iowa |
| Iowa Volunteer Batteries: | | | | |
| Fifth | July 8, 1898 | do | Sept. 5, 1898 | do |
| Sixth | do | do | do | do |
| Kansas Volunteer Infantry: | | | | |
| Twentieth | May 9-13, 1898 | Topeka, Kans | Oct. 28, 1899 | San Francisco, Cal. |
| Twenty-first | May 12-14, 1898 | do | Dec. 10, 1898 | Fort Leavenworth, Kans. |

[1] Companies C, D, E, F, H, I, K, L.
[2] Companies A B, G, M.
[3] Companies A, C, E, H, I, K, L, M.
[4] Companies B, D, F, G.
[5] Colored troops.

*the war with Spain, with losses from all causes, etc., as shown by muster-out rolls*—Cont'd.

| Strength at muster in. | | Strength at muster out. | | Total number accounted for on muster-out roll. | | Losses while in service. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Officers. | | | | | | |
| | | | | | | | | | Died. | | | |
| Officers. | Men. | Officers. | Men. | Officers. | Men. | Promoted or transferred. | Resigned or discharged. | Dismissed. | Killed in action. | Of wounds. | Disease. | Accident. |
| 47 | 969 | 43 | 836 | 51 | 977 | | 8 | | | | | |
| | | | | | | | | | | | | |
| 48 | 956 | 48 | 1,185 | 54 | 1,296 | | 5 | | | | 1 | |
| | | | | | | | | | | | | |
| 46 | 960 | 46 | 852 | 50 | 1,281 | | 4 | | | | | |
| 45 | 940 | 45 | 989 | 50 | 1,283 | | 5 | | | | | |
| 43 | 1,243 | 46 | 945 | 57 | 1,321 | | 10 | | | | 1 | |
| 8 | 246 | 7 | 308 | 8 | 333 | | 1 | | | | | |
| 32 | 644 | 32 | 444 | 50 | 678 | | 17 | | 1 | | | |
| 50 | 979 | 49 | 1,185 | 50 | 1,292 | | 1 | | | | | |
| 50 | 980 | 48 | 1,006 | 58 | 1,350 | 1 | 7 | | | | 2 | |
| 47 | 963 | 50 | 1,223 | 52 | 1,317 | | 1 | | | | 1 | |
| 50 | 994 | 49 | 960 | 66 | 1,308 | 1 | 15 | 1 | | | | |
| 50 | 974 | 48 | 1,212 | 53 | 1,256 | | 5 | | | | | |
| 50 | 973 | 49 | 1,224 | 53 | 1,284 | | 2 | | | | 2 | |
| 50 | 974 | 49 | 1,260 | 52 | 1,339 | | 3 | | | | | |
| 43 | 1,226 | 46 | 1,180 | 49 | 1,244 | | 3 | | | | | |
| 45 | 1,276 | 45 | 1,095 | 52 | 1,319 | | 6 | | | | | 1 |
| 50 | 974 | 50 | 1,158 | 57 | 1,218 | 2 | 5 | | | | | |
| 4 | 120 | 4 | 164 | 5 | 173 | | 1 | | | | | |
| 50 | 972 | 50 | 1,223 | 54 | 1,258 | | 2 | | | | 2 | |
| 50 | 976 | 50 | 1,223 | 52 | 1,294 | | 2 | | | | | |
| 50 | 977 | 49 | 1,240 | 52 | 1,317 | | 2 | | | | 1 | |
| 50 | 973 | 50 | 1,061 | 57 | 1,308 | | 7 | | | | | |
| 46 | 1,228 | 46 | 1,153 | 52 | 1,411 | 1 | 5 | | | | | |
| 6 | 196 | 6 | 198 | 6 | 211 | | | | | | | |
| 4 | 121 | 4 | 168 | 4 | 178 | | | | | | | |
| 4 | 121 | 4 | 172 | 4 | 175 | | | | | | | |
| 50 | 780 | 49 | 958 | 56 | 1,284 | | 5 | | | | 2 | |
| 50 | 751 | 48 | 1,223 | 53 | 1,322 | 1 | 4 | | | | | |
| 50 | 789 | 50 | 780 | 60 | 1,333 | | 9 | | | | | |
| 50 | 822 | 49 | 1,235 | 55 | 1,313 | | 5 | | | | 1 | |
| 3 | 106 | 3 | 106 | 3 | 106 | | | | | | | |
| 3 | 106 | 3 | 106 | 3 | 106 | | | | | | | |
| 46 | 964 | 46 | 720 | 92 | 1,364 | | 43 | | 3 | | | |
| 46 | 958 | 46 | 1,184 | 55 | 1,292 | | 8 | | | | 1 | |

N.—*Table showing strength of volunteer forces called into service of the United States during*

| Organization. | Losses while in service. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Officers. | | | | Enlisted men. | | | | | | | | | | |
| | Died. | | | | | Discharged. | | | Died. | | | | | | |
| | Drowned. | Suicide. | Murdered. | Total. | Transferred. | Disability. | By sentence of general court-martial. | By order. | Killed in action. | Of wounds received in action. | Of disease. | Accident. | Drowned. | Suicide. | Murdered or homicide. |
| **Delaware Volunteer Infantry:** | | | | | | | | | | | | | | | |
| First | | | | 8 | 2 | 8 | 3 | 74 | | | 8 | | | | |
| Do | | | | | | | | | | | | | | | |
| **Florida Volunteer Infantry:** | | | | | | | | | | | | | | | |
| First[1] | | | | 6 | 24 | 31 | 1 | 57 | | | 27 | | | | 2 |
| Do | | | | | | | | | | | | | | | |
| **Georgia Volunteer Infantry:** | | | | | | | | | | | | | | | |
| First | | | | 4 | 49 | 9 | 1 | 335 | | | 9 | 2 | | | |
| Second | | | | 5 | 79 | 42 | 2 | 132 | | | 15 | | | | |
| Third | | | | 11 | | 22 | 2 | 277 | | | 24 | 1 | | | |
| **Georgia Light Artillery:** | | | | | | | | | | | | | | | |
| Batteries A and B | | | | 1 | 3 | 6 | | 10 | | | 2 | | | | |
| **Idaho Volunteer Infantry:** | | | | | | | | | | | | | | | |
| First | | | | 18 | 22 | 25 | 8 | 156 | 4 | 2 | 13 | 1 | 1 | | |
| **Illinois Volunteer Infantry:** | | | | | | | | | | | | | | | |
| First | | | | 1 | 5 | 9 | | 9 | | | 84 | | | | |
| Second | | | | 10 | 86 | 70 | 1 | 163 | | | 22 | | | | |
| Third | | | | 2 | 21 | 10 | | 20 | | | 42 | | | | |
| Fourth | | | | 17 | 55 | 54 | | 210 | | | 24 | 1 | | | |
| Fifth | | | | 5 | 1 | 10 | | 9 | | | 17 | | | | |
| Sixth | | | | 4 | 21 | 11 | 1 | 4 | | | 22 | | | | |
| Seventh | | | | 3 | 53 | 5 | | 13 | | | 2 | | | | |
| Eighth[1] | | | | 3 | | 6 | 3 | 27 | | | 16 | 2 | | | 1 |
| Ninth | | | | 7 | 31 | 46 | 1 | 113 | | | 27 | 2 | | | |
| **Illinois Volunteer Cavalry:** | | | | | | | | | | | | | | | |
| First | | | | 7 | 12 | 14 | | 11 | | | 16 | 1 | | | |
| **Illinois Light Artillery:** | | | | | | | | | | | | | | | |
| Battery A | | | | 1 | | 4 | | 3 | | | 2 | | | | |
| **Indiana Volunteer Infantry:** | | | | | | | | | | | | | | | |
| One hundred and fifty-seventh. | | | | 4 | | 10 | | 5 | | | 16 | 1 | | | |
| One hundred and fifty-eighth. | | | | 2 | 33 | 18 | | 7 | | | 10 | | | | |
| One hundred and fifty-ninth. | | | | 3 | 36 | 12 | | 11 | | | 10 | | | | |
| One hundred and sixtieth. | | | | 7 | 69 | 59 | | 117 | | | 11 | | | | 1 |
| One hundred and sixty-first. | | | | 6 | 73 | 30 | | 131 | | | 18 | 1 | | | |
| First[1] (Companies A and B). | | | | | 1 | | | 1 | | | | | | | |
| **Indiana Volunteer Batteries:** | | | | | | | | | | | | | | | |
| Twenty-seventh | | | | | 1 | 2 | | 2 | | | | | | | |
| Twenty-eighth | | | | | 1 | 1 | | | | | 1 | | | | |
| **Iowa Volunteer Infantry:** | | | | | | | | | | | | | | | |
| Forty-ninth | | | | 7 | 10 | 11 | | 255 | | | 52 | 1 | | | |
| Fiftieth | | | | 5 | 34 | 10 | | 21 | | | 32 | | | | |
| Fifty-first | | 1 | | 10 | 61 | 89 | | 362 | 1 | | 39 | | | | |
| Fifty-second | | | | 6 | 28 | 10 | | 4 | | | 35 | | | | |
| **Iowa Volunteer Batteries:** | | | | | | | | | | | | | | | |
| Fifth | | | | | | | | | | | | | | | |
| Sixth | | | | | | | | | | | | | | | |
| **Kansas Volunteer Infantry:** | | | | | | | | | | | | | | | |
| Twentieth | | | | 46 | 80 | 145 | 4 | 346 | 19 | 11 | 35 | | | | |
| Twenty-first | | | | 9 | 35 | 12 | | 22 | | | 20 | | | | |

[1] Colored troops.

*the war with Spain, with losses from all causes, etc., as shown by muster-out rolls*—Cont'd.

| Losses while in service. | | Memoranda. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Enlisted men. | | Wounded | | Service beyond the United States. | | | | |
| | | | | Place. | Date. | | | |
| Deserted. | Total. | Officers. | Enlisted men. | Where. | Leaving the United States. | Arrival in foreign country. | Leaving foreign country. | Returned to the United States. |
| 46 | 141 | .... | ...... | ............ | ............ | ............ | ............ | |
| ...... | ...... | .... | ...... | ............ | ............ | ............ | ............ | |
| 19 | 161 | .... | ...... | ............ | ............ | ............ | ............ | |
| ...... | ...... | .... | ...... | ............ | ............ | ............ | ............ | |
| 24 | 429 | .... | ...... | ............ | ............ | ............ | ............ | |
| 24 | 294 | .... | ...... | ............ | ............ | ............ | ............ | |
| 50 | 376 | .... | ...... | Cuba ............ | Jan. 14, 1899 | Jan. 18, 1899 | Mar. 25, 1899 | Mar. 29, 1899 |
| 4 | 25 | .... | ...... | ............ | ............ | ............ | ............ | |
| 2 | 234 | 2 | 25 | Philippine Islds | June 27, 1898 | July 31, 1898 | July 30, 1899 | Aug. 29, 1899 |
| ...... | 107 | .... | ...... | Cuba ............ | July 1, 1898 | July 9, 1898 | Aug. 25, 1898 | Aug. 29, 1898 |
| 2 | 344 | .... | ...... | .....do ........... | Dec. 9, 1898 | Dec. 13, 1898 | Mar. 30, 1899 | Apr. 3, 1899 |
| 1 | 94 | .... | ...... | Porto Rico...... | July 28, 1898 | July 31, 1898 | Nov. 4, 1898 | Nov. 9, 1898 |
| 4 | 348 | .... | ...... | Cuba ............ | Jan. 3, 1899 | Jan. 7, 1899 | Apr. 4, 1899 | Apr. 5, 1899 |
| 7 | 44 | .... | ...... | ............ | ............ | ............ | ............ | |
| 1 | 60 | .... | ...... | Porto Rico...... | July 10, 1898 | July 25, 1898 | Sept. 7, 1898 | Sept. 13, 1898 |
| 6 | 79 | .... | ...... | ............ | ............ | ............ | ............ | |
| 9 | 64 | .... | ...... | Cuba ............ | Aug. 11, 1898 | Aug. 16, 1898 | Mar. 10, 1899 | Mar. 15, 1899 |
| 4 | 224 | .... | ...... | .....do ........... | Jan. 3, 1899 | Jan. 5, 1899 | Apr. 19, 1899 | Apr. 21, 1899 |
| 6 | 60 | .... | ...... | ............ | ............ | ............ | ............ | |
| ...... | 9 | .... | ...... | Porto Rico...... | July 28, 1898 | Aug. 4, 1898 | Sept. 7, 1898 | Sept. 18, 1898 |
| 3 | 35 | .... | ...... | ............ | ............ | ............ | ............ | |
| 3 | 71 | .... | ...... | ............ | ............ | ............ | ............ | |
| 8 | 77 | .... | ...... | ............ | ............ | ............ | ............ | |
| 15 | 272 | .... | ...... | Cuba ............ | Jan. 8, 1899 | Jan. 10, 1899 | Mar. 28, 1899 | Mar. 29, 1899 |
| 5 | 258 | .... | ...... | .....do ........... | Dec. 13, 1898 | Dec. 15, 1898 | Mar. 29, 1899 | Mar. 31, 1899 |
| 11 | 13 | .... | ...... | ............ | ............ | ............ | ............ | |
| ...... | 5 | .... | ...... | Porto Rico...... | July 28, 1898 | Aug. 4, 1898 | Sept. 8, 1898 | Sept. 15, 1898 |
| ...... | 3 | .... | ...... | ............ | ............ | ............ | ............ | |
| 2 | 331 | .... | ...... | Cuba ............ | Dec. 19, 1898 | Dec. 22, 1898 | Apr. 5, 1899 | Apr. 11, 1899 |
| 2 | 99 | .... | ...... | ............ | ............ | ............ | ............ | |
| 1 | 553 | 2 | 34 | Philippine Islds | Nov. 3, 1898 | Dec. 7, 1898 | Sept. 22, 1899 | Oct. 22, 1899 |
| 1 | 78 | .... | ...... | ............ | ............ | ............ | ............ | |
| ...... | ...... | .... | ...... | ............ | ............ | ............ | ............ | |
| ...... | ...... | .... | ...... | ............ | ............ | ............ | ............ | |
| 4 | 644 | 10 | 120 | Philippine Islds | Oct. 27, 1898 | Nov. 30, 1898 | Sept. 3, 1899 | Oct. 10, 1899 |
| 19 | 108 | .... | ...... | ............ | ............ | ............ | ............ | |

N.—*Table showing strength of volunteer forces called into service of the United States during*

| Organization. | Mustered in. | | Mustered out. | |
|---|---|---|---|---|
| | Date. | Place. | Date. | Place. |
| Kansas Volunteer Infantry—Continued. | | | | |
| Twenty-second | May 11–17, 1898 | Topeka, Kans | Nov. 3, 1898 | Fort Leavenworth, Kans. |
| Twenty-third[1] | July 2–19, 1898 | do | Apr. 10, 1899 | do |
| Kentucky Volunteer Infantry: | | | | |
| First | June 1–10, 1898 | Lexington, Ky | Feb. 24, 1899 | Louisville, Ky |
| Second | May 14–25, 1898 | do | Oct. 31, 1898 | Lexington, Ky |
| Third | May 21–31, 1898 | do | May 16, 1899 | Savannah, Ga |
| Fourth | July 4–27, 1898 | do | Feb. 12, 1899 | Anniston, Ala |
| Kentucky Volunteer Cavalry: | | | | |
| A and B | May 28, 1898 | Lexington, Ky | Oct. 14, 1898 | Lexington, Ky |
| Louisiana Volunteer Infantry: | | | | |
| First | May 8–18, 1898 | New Orleans, La | Oct. 3, 1898 | Jacksonville, Fla |
| Second | May 11–26, 1898 | do | Apr. 18, 1899 | Savannah, Ga |
| Louisiana Volunteer Batteries: | | | | |
| A, B, and C | July 6–7, 1898 | New Orleans, La | Nov. 12, 1898 | New Orleans, La |
| Maine Volunteer Infantry: | | | | |
| First | May 10–26, 1898 | Augusta, Me | Oct. 25–Dec. 13, 1898. | Maine |
| Maine Volunteer Artillery: | | | | |
| Batteries A, B, C, and D | May 17–July 20, 1898. | do | Mar. 31, 1899 | Savannah, Ga |
| Maryland Volunteer Infantry: | | | | |
| First | May 16–June 29, 1898. | Maryland | Feb. 28, 1899 | Augusta, Ga |
| Fifth | May 14, 1898 | Pimlico, Md | Oct. 22, 1898 | Baltimore, Md |
| Massachusetts Volunteer Infantry: | | | | |
| Second | May 8–10, 1898 | South Framingham, Mass. | Nov. 3, 1898 | Springfield, Mass |
| Fifth | June 30–July 2, 1898. | do | Mar. 31, 1899 | Greenville, S. C |
| Sixth | May 12–13, 1898 | do | Jan. 21, 1899 | Boston, Mass |
| Eighth | May 11–14, 1898 | do | Apr. 28, 1899 | do |
| Ninth | May 9–12, 1898 | do | Nov. 26, 1898 | do |
| Massachusetts Volunteer Artillery: | | | | |
| First | May 9, 1898 | Fort Warren, Mass. | Nov. 14, 1898 | Massachusetts |
| Michigan Volunteer Infantry: | | | | |
| Thirty-first | May 8–11, 1898 | Island Lake, Mich. | May 17, 1899 | Savannah, Ga |
| Thirty-second | May 11–14, 1898 | do | Oct. 25–Nov. 9, 1898. | Michigan |
| Thirty-third | May 13–20, 1898 | do | Nov. 9, 1898–Jan. 6, 1899. | do |
| Thirty-fourth | May 17–June 2, 1898. | do | Nov. 24, 1898–Jan. 2, 1899. | do |
| Thirty-fifth | July 9–25, 1898 | do | Mar. 31, 1899 | Augusta, Ga |
| Minnesota Volunteer Infantry: | | | | |
| Twelfth | May 6–7, 1898 | St. Paul, Minn | Nov. 5, 1898 | New Ulm, Minn |
| Thirteenth | May 7, 1898 | do | Oct. 3, 1899 | San Francisco, Cal. |
| Fourteenth | May 8, 1898 | do | Nov. 18, 1898 | St. Paul, Minn |
| Fifteenth | July 9–18, 1898 | do | Mar. 27, 1899 | Augusta, Ga |
| Mississippi Volunteer Infantry: | | | | |
| First | May 16–26, 1898 | Jackson, Miss | Dec. 20, 1898 | Columbia, Tenn |
| Second | May 30–June 8, 1898. | do | do | do |
| Third | July 22–Aug. 4, 1898. | do | Mar. 17, 1899 | Albany, Ga |

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[1] Colored troops.

*the war with Spain, with losses from all causes, etc., as shown by muster-out rolls*—Cont'd.

| Strength at muster in. | | Strength at muster out. | | Total number accounted for on muster-out roll. | | Losses while in service. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Officers. | | | | | | |
| | | | | | | | | | Died. | | | |
| Officers. | Men. | Officers. | Men. | Officers. | Men. | Promoted or transferred. | Resigned or discharged. | Dismissed. | Killed in action. | Of wounds. | Disease. | Accident. |
| 46 | 963 | 46 | 1,230 | 50 | 1,288 | ...... | 1 | 1 | ...... | ...... | 2 | ...... |
| 29 | 850 | 28 | 823 | 32 | 851 | ...... | 3 | ...... | ...... | ...... | 1 | ...... |
| 48 | 1,251 | 47 | 1,222 | 51 | 1,283 | ...... | 4 | ...... | ...... | ...... | ...... | ...... |
| 45 | 941 | 50 | 1,266 | 54 | 1,374 | 1 | 3 | ...... | ...... | ...... | ...... | ...... |
| 46 | 945 | 50 | 954 | 57 | 1,254 | ...... | 7 | ...... | ...... | ...... | ...... | ...... |
| 41 | 1,268 | 46 | 1,117 | 49 | 1,286 | ...... | 3 | ...... | ...... | ...... | ...... | ...... |
| 6 | 154 | 6 | 197 | 6 | 200 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 46 | 977 | 42 | 1,114 | 50 | 1,330 | 1 | 3 | ...... | ...... | ...... | 4 | ...... |
| 46 | 960 | 45 | 797 | 63 | 1,146 | 1 | 14 | ...... | ...... | ...... | 3 | ...... |
| 9 | 318 | 9 | 312 | 9 | 318 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 46 | 979 | 46 | 1,211 | 51 | 1,301 | 1 | 2 | ...... | ...... | ...... | 2 | ...... |
| 15 | 465 | 15 | 457 | 16 | 525 | ...... | 1 | ...... | ...... | ...... | ...... | ...... |
| 43 | 1,044 | 49 | 1,070 | 63 | 1,307 | ...... | 14 | ...... | ...... | ...... | ...... | ...... |
| 48 | 935 | 49 | 1,229 | 51 | 1,290 | ...... | 1 | ...... | ...... | ...... | 1 | ...... |
| 47 | 896 | 44 | 797 | 47 | 896 | ...... | ...... | ...... | 1 | ...... | 2 | ...... |
| 41 | 1,230 | 46 | 1,153 | 60 | 1,268 | ...... | 14 | ...... | ...... | ...... | ...... | ...... |
| 47 | 896 | 46 | 1,172 | 54 | 1,280 | ...... | 8 | ...... | ...... | ...... | ...... | ...... |
| 47 | 896 | 46 | 1,161 | 59 | 1,358 | ...... | 12 | ...... | ...... | ...... | 1 | ...... |
| 47 | 896 | 46 | 1,151 | 53 | 1,281 | 1 | 2 | ...... | ...... | ...... | 4 | ...... |
| 48 | 701 | 46 | 666 | 48 | 709 | 1 | 1 | ...... | ...... | ...... | ...... | ...... |
| 47 | 978 | 46 | 991 | 58 | 1,394 | ...... | 10 | ...... | ...... | ...... | 2 | ...... |
| 47 | 966 | 46 | 1,234 | 48 | 1,333 | ...... | 2 | ...... | ...... | ...... | ...... | ...... |
| 44 | 978 | 47 | 1,159 | 51 | 1,259 | ...... | 3 | ...... | ...... | ...... | 1 | ...... |
| 50 | 980 | 45 | 1,153 | 47 | 1,287 | ...... | 1 | ...... | ...... | ...... | 1 | ...... |
| 45 | 1,283 | 47 | 1,118 | 58 | 1,306 | ...... | 10 | ...... | ...... | ...... | 1 | ...... |
| 50 | 982 | 49 | 1,216 | 55 | 1,286 | ...... | 5 | ...... | ...... | ...... | 1 | ...... |
| 50 | 979 | 51 | 956 | 61 | 1,311 | ...... | 8 | ...... | ...... | 1 | 1 | ...... |
| 50 | 981 | 50 | 1,180 | 61 | 1,286 | ...... | 11 | ...... | ...... | ...... | ...... | ...... |
| 46 | 1,280 | 46 | 1,110 | 52 | 1,268 | ...... | 6 | ...... | ...... | ...... | ...... | ...... |
| 44 | 947 | 45 | 982 | 49 | 1,092 | ...... | 2 | ...... | ...... | ...... | 2 | ...... |
| 46 | 949 | 46 | 1,222 | 48 | 1,333 | ...... | 2 | ...... | ...... | ...... | ...... | ...... |
| 18 | 616 | 24 | 491 | 28 | 611 | ...... | 4 | ...... | ...... | ...... | ...... | ...... |

N.—*Table showing strength of volunteer forces called into service of the United States during*

| Organization. | Losses while in service. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Officers. | | | | Enlisted men. | | | | | | | | | | |
| | Died. | | | | | Discharged. | | | Died. | | | | | | |
| | Drowned. | Suicide. | Murdered. | Total. | Transferred. | Disability. | By sentence of general court-martial. | By order. | Killed in action. | Of wounds received in action. | Of disease. | Accident. | Drowned. | Suicide. | Murdered or homicide. |
| **Kansas Volunteer Infantry—Continued.** | | | | | | | | | | | | | | | |
| Twenty-second | | | | 4 | 14 | 15 | 2 | 10 | | | 12 | | | | |
| Twenty-third[1] | | | | 4 | | 5 | 3 | 7 | | | 11 | 1 | | | 1 |
| **Kentucky Volunteer Infantry:** | | | | | | | | | | | | | | | |
| First | | | | 4 | 16 | 1 | | 13 | | | 27 | 1 | | | |
| Second | | | | 4 | 82 | 4 | | 33 | | | 27 | | | | |
| Third | | | | 7 | 27 | 60 | 8 | 129 | | | 17 | 2 | | | 1 |
| Fourth | | | | 3 | 44 | 29 | | 22 | | | 13 | | | | 1 |
| **Kentucky Volunteer Cavalry:** | | | | | | | | | | | | | | | |
| A and B | | | | | 1 | 1 | | | | | | | | | |
| **Louisiana Volunteer Infantry:** | | | | | | | | | | | | | | | |
| First | | | | 8 | 189 | 40 | | 14 | | | 10 | 1 | 1 | | 1 |
| Second | | | | 18 | 24 | 122 | 5 | 140 | | | 13 | 1 | | | |
| **Louisiana Volunteer Batteries:** | | | | | | | | | | | | | | | |
| A, B, and C | | | | | | 4 | | | | | 1 | | | | |
| **Maine Volunteer Infantry:** | | | | | | | | | | | | | | | |
| First | | | | 5 | 8 | 10 | 1 | 8 | | | 39 | | | | |
| **Maine Volunteer Artillery:** | | | | | | | | | | | | | | | |
| Batteries A, B, C, and D | | | | 1 | 14 | 6 | | 22 | | | 10 | | | | |
| **Maryland Volunteer Infantry:** | | | | | | | | | | | | | | | |
| First | | | | 14 | 13 | 32 | 6 | 120 | | | 12 | 1 | | | |
| Fifth | | | | 2 | 15 | 8 | 1 | 15 | | | 19 | | | | |
| **Massachusetts Volunteer Infantry:** | | | | | | | | | | | | | | | |
| Second | | | | 3 | 1 | | | 4 | 4 | 4 | 86 | | | | |
| Fifth | | | | 14 | | 28 | | 59 | | | 13 | | | | |
| Sixth | | | | 8 | 75 | 4 | | 4 | | | 25 | | | | |
| Eighth | | | | 13 | 25 | 54 | 1 | 72 | | | 30 | | | | |
| Ninth | | | | 7 | 8 | 2 | | 8 | | | 110 | 1 | | | |
| **Massachusetts Volunteer Artillery:** | | | | | | | | | | | | | | | |
| First | | | | 2 | 2 | 7 | | 33 | | | 1 | | | | |
| **Michigan Volunteer Infantry:** | | | | | | | | | | | | | | | |
| Thirty-first | | | | 12 | 20 | 25 | 4 | 316 | | | 20 | | | | |
| Thirty-second | | | | 2 | 42 | 16 | | 19 | | | 20 | | | | |
| Thirty-third | | | | 4 | 21 | 13 | | 5 | 2 | 1 | 57 | | | | |
| Thirty-fourth | | | | 2 | 45 | 1 | | 7 | | | 79 | 1 | 1 | | |
| Thirty-fifth | | | | 11 | 32 | 38 | | 79 | | | 24 | | | | |
| **Minnesota Volunteer Infantry:** | | | | | | | | | | | | | | | |
| Twelfth | | | | 6 | 24 | 10 | | 12 | | | 18 | | | 1 | |
| Thirteenth | | | | 10 | 28 | 45 | 2 | 236 | 4 | 2 | 33 | 2 | 1 | | |
| Fourteenth | | | | 11 | 26 | 12 | | 56 | | | 9 | | | | |
| Fifteenth | | | | 6 | 12 | 47 | 3 | 67 | | | 20 | | | | |
| **Mississippi Volunteer Infantry:** | | | | | | | | | | | | | | | |
| First | | | | 4 | 13 | 14 | 1 | 24 | | | 29 | 1 | | | |
| Second | | | | 2 | 85 | 2 | | 45 | | | 20 | | | | |
| Third | | | | 4 | 20 | 12 | | 46 | | | 7 | | | | |

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[1] Colored troops.

*the war with Spain, with losses from all causes, etc., as shown by muster-out rolls*—Cont'd.

| Losses while in service. | | Memoranda. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Enlisted men. | | Wounded | | Service beyond the United States. | | | | |
| | | | | Place. | Date. | | | |
| Deserted. | Total. | Officers. | Enlisted men. | Where. | Leaving the United States. | Arrival in foreign country. | Leaving foreign country. | Returned to the United States. |
| 5 | 58 | | | | | | | |
| | 28 | | | Cuba | Aug. 25, 1898 | Aug. 31, 1898 | Mar. 1, 1899 | Mar. 5, 1899 |
| 3 | 61 | | | Porto Rico | Aug. 3, 1898 | Aug. 10, 1898 | Dec. 5, 1898 | Dec. 12, 1898 |
| 12 | 108 | | | | | | | |
| 56 | 300 | | | Cuba | Jan. 18, 1899 | Jan. 21, 1899 | Apr. 8, 1899 | Apr. 10, 1899 |
| 60 | 169 | | | | | | | |
| 1 | 3 | | | | | | | |
| 10 | 216 | | | | | | | |
| 44 | 349 | | | Cuba | Dec. 24, 1898 | Dec. 27, 1898 | Mar. 20, 1899 | Mar. 22, 1899 |
| 1 | 6 | | | | | | | |
| 24 | 90 | | | | | | | |
| 16 | 68 | | | Cuba | Jan. 17, 1899 | Jan. 20, 1899 | Mar. 9, 1899 | Mar. 11, 1899 |
| 58 | 287 | | | | | | | |
| 3 | 61 | | | | | | | |
| | 99 | 3 | 41 | Cuba | June 14, 1898 | June 22, 1898 | Aug. 21, 1898 | Aug. 25, 1898 |
| 15 | 115 | | | | | | | |
| | 108 | 1 | 3 | Porto Rico | July 8, 1898 | July 25, 1898 | Oct. 21, 1898 | Oct. 27, 1898 |
| 15 | 197 | | | Cuba | Jan. 7, 1899 | Jan. 10, 1899 | Apr. 4, 1899 | Apr. 9, 1899 |
| 1 | 130 | | 3 | do | June 26, 1898 | July 1, 1898 | Aug. 26, 1898 | Sept. 4, 1898 |
| | 43 | | | | | | | |
| 18 | 408 | | | Cuba | Jan. 27, 1899 | Feb. 1, 1899 | Apr. 13, 1899 | Apr. 16, 1899 |
| 2 | 99 | | | | | | | |
| 1 | 100 | | 10 | Cuba | June 23, 1898 | June 27, 1898 | Aug. 21, 1898 | Aug. 26, 1898 |
| | 184 | | | do | June 26, 1898 | June 30, 1898 | Aug. 17, 1898 | Aug. 23, 1898 |
| 15 | 188 | | | | | | | |
| 5 | 70 | | | | | | | |
| 2 | 355 | 6 | 68 | Philippine Islds | June 27, 1898 | July 31, 1898 | Aug. 11, 1899 | Sept. 7, 1899 |
| 3 | 106 | | | | | | | |
| 9 | 156 | | | | | | | |
| 28 | 110 | | | | | | | |
| 9 | 111 | | | | | | | |
| 35 | 120 | | | | | | | |

N.—*Table showing strength of volunteer forces called into service of the United States during*

| Organization. | Mustered in. | | Mustered out. | |
|---|---|---|---|---|
| | Date. | Place. | Date. | Place. |
| Missouri Volunteer Infantry: | | | | |
| First | May 13, 1898 | Jefferson Barracks, Mo. | Oct. 31, 1898 | St. Louis, Mo |
| Second | May 12, 1898 | Jefferson Barracks, Mo. | Feb. 27–Mar. 3, 1899. | Albany, Ga |
| Third | May 14, 1898 | do | Nov. 7, 1898 | Kansas City, Mo |
| Fourth | May 16, 1898 | do | Feb. 10, 1899 | Greenville, S. C |
| Fifth | May 18, 1898 | do | Nov. 9, 1898 | Kansas City, Mo |
| Sixth | July 20–Aug. 6, 1898. | do | May 10, 1899 | Savannah, Ga |
| Missouri Light Artillery: | | | | |
| Battery A | May 9, 1898 | do | Nov. 30, 1898 | Jefferson Barracks, Mo. |
| Montana Volunteer Infantry: | | | | |
| First | May 5–10, 1898 | Helena, Mont | Oct. 17, 1899 | San Francisco, Cal |
| Nebraska Volunteer Infantry: | | | | |
| First | May 9–10, 1898 | Lincoln, Nebr | Aug. 23, 1899 | do |
| Second | May 9–14, 1898 | do | Oct. 24, 1898 | Omaha, Nebr |
| Third | July 1–17, 1898 | Omaha, Nebr | May 11, 1899 | Augusta, Ga |
| Nevada Volunteer Infantry: | | | | |
| Battalion | July 19–22, 1898 | Carson City, Nev | Oct. 29, 1898 | Carson City, Nev |
| Nevada Volunteer Cavalry: | | | | |
| First Troop | June 8, 1898 | Cheyenne, Wyo | Nov. 15, 1899 | San Francisco, Cal |
| New Hampshire Volunteer Infantry: | | | | |
| First | May 8–14, 1898 | Concord, N. H | Oct. 31, 1898 | Concord, N. H |
| New Jersey Volunteer Infantry: | | | | |
| First | May 5–12, 1898 | Sea Girt, N. J | Nov. 4, 1898 | Newark, N. J |
| Second | May 13–15, 1898 | do | Nov. 17, 1898 | Paterson, N. J |
| Third | May 11–13, 1898 | do | Feb. 11, 1899 | Athens, Ga |
| Fourth | July 7–24, 1898 | do | Apr. 6, 1899 | Greenville, S. C |
| New York Volunteer Infantry: | | | | |
| First | May 20, 1898 | Hempstead, N. Y | Feb. 20–26, 1899. | New York |
| Second | May 16–17, 1898 | do | Oct. 25–Nov. 1, 1898. | do |
| Third | May 17, 1898 | do | Nov. 30–Dec. 10, 1898. | do |
| Eighth | May 14–19, 1898 | Peekskill, N. Y | Nov. 3, 1898 | do |
| Ninth | May 17–21, 1898 | do | Nov. 15, 1898 | do |
| Twelfth | May 13, 1898 | do | Apr. 20, 1899 | do |
| Fourteenth | May 13–16, 1898 | Hempstead, N. Y | Oct. 27, 1898 | Brooklyn, N. Y |
| Twenty-second | May 24, 1898 | do | Nov. 23, 1898 | Fort Slocum, N. Y. |
| Forty-seventh | do | do | Mar. 31, 1899 | Brooklyn, N. Y |
| Sixty-fifth | May 17, 1898 | do | Nov. 19, 1898 | Buffalo, N. Y |
| Sixty-ninth | May 19, 1898 | do | Jan. 31, 1899 | New York, N. Y |
| Seventy-first | May 10–12, 1898 | do | Nov. 15, 1898 | do |
| Two hundred and first | July 16–26, 1898 | New York, N. Y | Apr. 3, 1899 | Greenville, S. C |
| Two hundred and second. | July 19–Aug. 8, 1898. | Buffalo, N. Y | Apr. 15, 1899 | Savannah, Ga |
| Two hundred and third | July 15–25, 1898 | New York, N. Y | Mar. 25, 1899 | Greenville, S. C |
| New York Volunteer Cavalry: | | | | |
| Troop A | May 20, 1898 | Hempstead, N. Y | Nov. 28, 1898 | New York, N. Y |
| Troop C | do | do | Nov. 25, 1898 | Brooklyn, N. Y |
| New York Volunteer Artillery: | | | | |
| Fourth Light Battery | July 27, 1898 | New York, N. Y | Oct. 21, 1898 | New York, N. Y |
| Fifth Light Battery | do | do | Oct. 24, 1898 | do |
| Seventh Light Battery | do | Rochester, N. Y | Nov. 30, 1898 | Rochester, N. Y |

*the war with Spain, with losses from all causes, etc., as shown by muster-out rolls*—Cont'd.

| Strength at muster in. | | Strength at muster out. | | Total number accounted for on muster-out roll. | | Losses while in service. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Officers. | | | | | | |
| | | | | | | | | | Died. | | | |
| Officers. | Men. | Officers. | Men. | Officers. | Men. | Promoted or transferred. | Resigned or discharged. | Dismissed. | Killed in action. | Of wounds. | Disease. | Accident. |
| 47 | 981 | 43 | 1,177 | 47 | 1,319 | ...... | 3 | ...... | ...... | ...... | 1 | ...... |
| 45 | 943 | 46 | 1,060 | 58 | 1,281 | ...... | 12 | ...... | ...... | ...... | ...... | ...... |
| 50 | 974 | 47 | 1,237 | 53 | 1,321 | 1 | 5 | ...... | ...... | ...... | ...... | ...... |
| 49 | 974 | 45 | 1,115 | 58 | 1,310 | ...... | 12 | ...... | ...... | ...... | 1 | ...... |
| 49 | 976 | 47 | 1,207 | 54 | 1,322 | ...... | 7 | ...... | ...... | ...... | ...... | ...... |
| 27 | 1,265 | 46 | 1,027 | 53 | 1,357 | ...... | 6 | ...... | ...... | ...... | 1 | ...... |
| 4 | 121 | 4 | 155 | 4 | 173 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 48 | 976 | 48 | 673 | 78 | 1,054 | ...... | 28 | ...... | 1 | ...... | 1 | ...... |
| 51 | 983 | 45 | 842 | 98 | 1,288 | 23 | 27 | ...... | 2 | 1 | ...... | ...... |
| 46 | 975 | 45 | 1,237 | 47 | 1,307 | ...... | 1 | ...... | ...... | ...... | 1 | ...... |
| 40 | 1,274 | 46 | 859 | 55 | 1,251 | ...... | 8 | ...... | ...... | ...... | 1 | ...... |
| 12 | 400 | 13 | 277 | 14 | 405 | ...... | 1 | ...... | ...... | ...... | ...... | ...... |
| 3 | 81 | 3 | 50 | 3 | 100 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 47 | 952 | 47 | 1,234 | 60 | 1,309 | ...... | 10 | ...... | ...... | ...... | 3 | ...... |
| 51 | 949 | 46 | 1,214 | 51 | 1,302 | ...... | 5 | ...... | ...... | ...... | ...... | ...... |
| 51 | 979 | 50 | 1,220 | 54 | 1,314 | ...... | 4 | ...... | ...... | ...... | ...... | ...... |
| 51 | 970 | 48 | 1,035 | 63 | 1,248 | ...... | 15 | ...... | ...... | ...... | ...... | ...... |
| 31 | 1,265 | 49 | 1,053 | 69 | 1,400 | ...... | 20 | ...... | ...... | ...... | ...... | ...... |
| 47 | 972 | 46 | 1,216 | 54 | 1,289 | ...... | 8 | ...... | ...... | ...... | ...... | ...... |
| 45 | 974 | 49 | 1,233 | 52 | 1,298 | ...... | 3 | ...... | ...... | ...... | ...... | ...... |
| 45 | 972 | 47 | 1,222 | 61 | 1,318 | ...... | 12 | ...... | ...... | ...... | 2 | ...... |
| 49 | 976 | 47 | 1,237 | 54 | 1,338 | 1 | 5 | ...... | ...... | ...... | 1 | ...... |
| 49 | 977 | 44 | 1,164 | 59 | 1,335 | ...... | 11 | ...... | ...... | ...... | 4 | ...... |
| 43 | 978 | 46 | 945 | 76 | 1,331 | ...... | 30 | ...... | ...... | ...... | ...... | ...... |
| 47 | 976 | 45 | 1,155 | 63 | 1,279 | 5 | 13 | ...... | ...... | ...... | ...... | ...... |
| 49 | 960 | 49 | 1,149 | 56 | 1,295 | ...... | 7 | ...... | ...... | ...... | ...... | ...... |
| 47 | 968 | 47 | 1,034 | 69 | 1,244 | 5 | 17 | ...... | ...... | ...... | ...... | ...... |
| 50 | 980 | 46 | 1,242 | 50 | 1,339 | ...... | 4 | ...... | ...... | ...... | ...... | ...... |
| 47 | 978 | 49 | 1,059 | 62 | 1,279 | ...... | 13 | ...... | ...... | ...... | ...... | ...... |
| 45 | 977 | 50 | 1,114 | 54 | 1,271 | 2 | ...... | ...... | ...... | ...... | 2 | ...... |
| 42 | 1,235 | 45 | 964 | 84 | 1,287 | 16 | 23 | ...... | ...... | ...... | ...... | ...... |
| 43 | 1,255 | 46 | 1,027 | 57 | 1,257 | ...... | 10 | ...... | ...... | ...... | 1 | ...... |
| 44 | 1,266 | 46 | 978 | 61 | 1,236 | ...... | 15 | ...... | ...... | ...... | ...... | ...... |
| 3 | 81 | 3 | 97 | 3 | 122 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 3 | 81 | 3 | 100 | 3 | 107 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 3 | 106 | 3 | 105 | 3 | 106 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 2 | 106 | 3 | 94 | 3 | 100 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 2 | 106 | 3 | 103 | 3 | 106 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |

N.—*Table showing strength of volunteer forces called into service of the United States during*

| Organization. | Losses while in service. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Officers. | | | | Enlisted men. | | | | | | | | | | |
| | Died. | | | | | Discharged. | | | Died. | | | | | | |
| | Drowned. | Suicide. | Murdered. | Total. | Transferred. | Disability. | By sentence of general court-martial. | By order. | Killed in action. | Of wounds received in action. | Of disease. | Accident. | Drowned. | Suicide. | Murdered or homicide. |
| Missouri Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 4 | 49 | 29 | 1 | 37 | .... | .... | 18 | 3 | 1 | .... | .... |
| Second | .... | .... | .... | 12 | 27 | 28 | .... | 104 | .... | .... | 16 | 1 | 1 | .... | .... |
| Third | .... | .... | .... | 6 | 30 | 21 | .... | 12 | .... | .... | 18 | 1 | .... | .... | .... |
| Fourth | .... | .... | .... | 13 | 29 | 43 | 1 | 66 | .... | .... | 28 | .... | .... | .... | .... |
| Fifth | .... | .... | .... | 7 | 39 | 27 | .... | 16 | .... | .... | 16 | .... | .... | .... | .... |
| Sixth | .... | .... | .... | 7 | 21 | 32 | 1 | 228 | .... | .... | 23 | 1 | .... | .... | .... |
| Missouri Light Artillery: | | | | | | | | | | | | | | | |
| Battery A | .... | .... | .... | ...... | 3 | 4 | .... | 7 | .... | .... | 3 | .... | .... | .... | .... |
| Montana Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 30 | 71 | 29 | 4 | 232 | 12 | 8 | 14 | .... | 1 | .... | .... |
| Nebraska Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 53 | 25 | 52 | 2 | 304 | 19 | 13 | 28 | .... | 1 | .... | .... |
| Second | .... | .... | .... | 2 | ...... | 6 | .... | 36 | .... | .... | 25 | .... | .... | .... | .... |
| Third | .... | .... | .... | 9 | 10 | 20 | 1 | 327 | .... | .... | 31 | .... | .... | .... | .... |
| Nevada Volunteer Infantry: | | | | | | | | | | | | | | | |
| Battalion | .... | .... | .... | 1 | ...... | 1 | .... | 126 | .... | .... | ...... | .... | .... | .... | .... |
| Nevada Volunteer Cavalry: | | | | | | | | | | | | | | | |
| First Troop | .... | .... | .... | ...... | ...... | 3 | 3 | 40 | .... | .... | 1 | .... | .... | .... | .... |
| New Hampshire Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 13 | 14 | 6 | .... | 18 | .... | .... | 29 | .... | .... | .... | .... |
| New Jersey Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 5 | 31 | 26 | .... | 13 | .... | .... | 9 | .... | .... | .... | .... |
| Second | .... | .... | .... | 4 | 37 | 20 | .... | 11 | .... | .... | 23 | .... | 1 | .... | .... |
| Third | .... | .... | .... | 15 | 5 | 11 | 9 | 155 | .... | .... | 2 | 1 | .... | .... | .... |
| Fourth | .... | .... | .... | 20 | ...... | 24 | 1 | 279 | .... | .... | 4 | .... | .... | .... | .... |
| New York Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | .... | .... | .... | 8 | 2 | 17 | .... | 27 | .... | .... | 24 | .... | .... | .... | .... |
| Second | .... | .... | .... | 3 | 12 | 5 | .... | 14 | .... | .... | 32 | .... | .... | .... | .... |
| Third | .... | .... | .... | 14 | 30 | 4 | .... | 30 | .... | .... | 31 | .... | .... | 1 | .... |
| Eighth | .... | .... | .... | 7 | 16 | 17 | .... | 22 | .... | .... | 21 | .... | .... | .... | .... |
| Ninth | .... | .... | .... | 15 | 15 | 11 | 2 | 75 | .... | .... | 39 | 2 | .... | .... | .... |
| Twelfth | .... | .... | .... | 30 | 13 | 47 | .... | 210 | .... | .... | 23 | 1 | .... | 1 | .... |
| Fourteenth | .... | .... | .... | 18 | 15 | 25 | 1 | 43 | .... | .... | 26 | .... | .... | .... | .... |
| Twenty-second | .... | .... | .... | 7 | 1 | 18 | .... | 102 | .... | .... | ...... | .... | 2 | .... | .... |
| Forty-seventh | .... | .... | .... | 22 | 22 | 13 | .... | 122 | .... | .... | 7 | 2 | .... | .... | 1 |
| Sixty-fifth | .... | .... | .... | 4 | 18 | 23 | 2 | 24 | .... | .... | 17 | 1 | .... | .... | .... |
| Sixty-ninth | .... | .... | .... | 13 | 29 | 31 | .... | 86 | .... | .... | 24 | 3 | .... | .... | .... |
| Seventy-first | .... | .... | .... | 4 | 22 | 4 | .... | 30 | 12 | 3 | 77 | 3 | .... | 1 | .... |
| Two hundred and first | .... | .... | .... | 39 | 48 | 32 | 9 | 91 | .... | .... | 23 | 1 | .... | .... | .... |
| Two hundred and second. | .... | .... | .... | 11 | 10 | 29 | 5 | 144 | .... | .... | 13 | 1 | .... | .... | 1 |
| Two hundred and third | .... | .... | .... | 15 | 33 | 30 | 1 | 104 | .... | .... | 20 | .... | .... | .... | .... |
| New York Volunteer Cavalry: | | | | | | | | | | | | | | | |
| Troop A | .... | .... | .... | ...... | 3 | 1 | .... | 20 | .... | .... | ...... | 1 | .... | .... | .... |
| Troop C | .... | .... | .... | ...... | ...... | 3 | .... | 2 | .... | .... | 2 | .... | .... | .... | .... |
| New York Volunteer Artillery: | | | | | | | | | | | | | | | |
| Fourth Light Battery | .... | .... | .... | ...... | ...... | ...... | .... | ...... | .... | .... | ...... | .... | .... | .... | .... |
| Fifth Light Battery | .... | .... | .... | ...... | 1 | ...... | .... | 1 | .... | .... | 1 | .... | .... | .... | .... |
| Seventh Light Battery | .... | .... | .... | ...... | ...... | ...... | .... | 1 | .... | .... | ...... | .... | .... | .... | .... |

*the war with Spain, with losses from all causes, etc., as shown by muster-out rolls*—Cont'd.

| Losses while in service. | | Memoranda. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Enlisted men. | | Wounded | | Service beyond the United States. | | | | |
| | | | | Place. | Date. | | | |
| Deserted. | Total. | Officers. | Enlisted men. | Where. | Leaving the United States. | Arrival in foreign country. | Leaving foreign country. | Returned to the United States. |
| 9 | 142 | .... | ...... | ...... | ...... | ...... | ...... | |
| 44 | 221 | .... | ...... | ...... | ...... | ...... | ...... | |
| 7 | 84 | .... | ...... | ...... | ...... | ...... | ...... | |
| 83 | 195 | .... | ...... | ...... | ...... | ...... | ...... | |
| 17 | 115 | .... | ...... | ...... | ...... | ...... | ...... | |
| 24 | 330 | .... | ...... | Cuba ........... | Dec. 21, 1898 | Dec. 24, 1898 | Apr. 9, 1899 | Apr. 11, 1899 |
| 1 | 18 | .... | ...... | Porto Rico ..... | July 28, 1898 | Aug. 4, 1898 | Sept. 8, 1898 | Sept. 15, 1898 |
| 10 | 381 | 9 | 111 | Philippine Islds | July 18, 1898 | Aug. 24, 1898 | Aug. 23, 1899 | Sept. 22, 1899 |
| 2 | 446 | 11 | 166 | .....do.......... | June 15, 1898 | July 17, 1898 | July 1, 1899 | July 29, 1899 |
| 3 | 70 | .... | ...... | ...... | ...... | ...... | ...... | |
| 3 | 392 | .... | ...... | Cuba ........... | Dec. 30, 1898 | Jan. 1, 1899 | Apr. 7, 1899 | Apr. 12, 1899 |
| 1 | 128 | .... | ...... | ...... | ...... | ...... | ...... | |
| 3 | 50 | .... | ...... | Philippine Islds | Nov. 6, 1898 | Dec. 6, 1898 | Sept. 29, 1899 | Nov. 5, 1899 |
| 13 | 75 | .... | ...... | ...... | ...... | ...... | ...... | |
| 9 | 88 | .... | ...... | ...... | ...... | ...... | ...... | |
| 2 | 94 | .... | ...... | ...... | ...... | ...... | ...... | |
| 30 | 213 | .... | ...... | ...... | ...... | ...... | ...... | |
| 39 | 347 | .... | ...... | ...... | ...... | ...... | ...... | |
| 3 | 73 | .... | ...... | Hawaiian Islds | Aug. 5, 1898 | Aug. 14, 1898 | Nov. 29, 1898 | Dec. 6, 1898 |
| 2 | 65 | .... | ...... | ...... | ...... | ...... | ...... | |
| ...... | 96 | .... | ...... | ...... | ...... | ...... | ...... | |
| 25 | 101 | .... | ...... | ...... | ...... | ...... | ...... | |
| 27 | 171 | .... | ...... | ...... | ...... | ...... | ...... | |
| 91 | 386 | .... | ...... | Cuba ........... | Dec. 30, 1898 | Jan. 1, 1899 | Mar. 22, 1899 | Mar. 26, 1899 |
| 14 | 124 | .... | ...... | ...... | ...... | ...... | ...... | |
| 23 | 146 | .... | ...... | ...... | ...... | ...... | ...... | |
| 43 | 210 | .... | ...... | Porto Rico...... | Oct. 10, 1898 | Oct. 16, 1898 | Mar. 4, 1899 | Mar. 10, 1899 |
| 12 | 97 | .... | ...... | ...... | ...... | ...... | ...... | |
| 47 | 220 | .... | ...... | ...... | ...... | ...... | ...... | |
| 5 | 157 | 1 | 67 | Cuba ........... | June 14, 1898 | June 22, 1898 | Aug. 8, 1898 | Aug. 18, 1898 |
| 119 | 323 | .... | ...... | ...... | ...... | ...... | ...... | |
| 27 | 230 | .... | ...... | Cuba ........... | Dec. 5, 1898 | Dec. 9, 1898 | Mar. 18, 1899 | Mar. 20, 1899 |
| 70 | 258 | .... | ...... | ...... | ...... | ...... | ...... | |
| ...... | 25 | .... | ...... | Porto Rico...... | July 28, 1898 | Aug. 2, 1898 | Sept. 3, 1898 | Sept. 10, 1898 |
| ...... | 7 | .... | ...... | .....do.......... | .....do...... | .....do...... | .....do...... | Do. |
| 1 | 1 | .... | ...... | ...... | ...... | ...... | ...... | |
| 3 | 6 | .... | ...... | ...... | ...... | ...... | ...... | |
| 2 | 8 | .... | ...... | ...... | ...... | ...... | ...... | |

N.—*Table showing strength of volunteer forces called into service of the United States during*

| Organization. | Mustered in. | | Mustered out. | |
|---|---|---|---|---|
| | Date. | Place. | Date. | Place. |
| North Carolina Volunteer Infantry: | | | | |
| First | May 3-11, 1898 | Raleigh, N. C | Apr. 22, 1899 | Savannah, Ga |
| Second | May 9-27, 1898 | do | Nov. 3-25, 1898 | North Carolina |
| Third[1] | May 12-July 19, 1898. | Fort Macon, N. C | Jan. 31-Feb. 8, 1899. | Macon, Ga |
| North Dakota Volunteer Infantry: | | | | |
| First | May 13-16, 1898 | Fargo, N. Dak | Sept. 25, 1899 | San Francisco, Cal. |
| Ohio Volunteer Infantry: | | | | |
| First | May 6-June 30, 1898. | Columbus, Ohio | Oct. 25, 1898 | Cincinnati, Ohio |
| Second | May 10-June 30, 1898. | do | Feb. 10-15, 1899. | Macon, Ga |
| Third | do | do | Oct. 26, 1898 | Columbus, Ohio |
| Fourth | May 9-16, 1898 | do | Jan. 20, 1899 | do |
| Fifth | May 11-June 30, 1898. | do | Nov. 5, 1898 | Cleveland, Ohio |
| Sixth | May 12-July 2, 1898. | do | May 24, 1899 | Augusta, Ga |
| Seventh | May 13-June 30, 1898. | do | Nov. 6, 1898 | Columbus, Ohio |
| Eighth | May 13, 1898 | do | Nov. 21, 1898 | Wooster, Ohio |
| Ninth[1] | May 14-July 8, 1898. | do | Jan. 28, 1899 | Summerville, S. C. |
| Tenth | July 1-7, 1898 | do | Mar. 23, 1899 | Augusta, Ga |
| Ohio Volunteer Cavalry: | | | | |
| First | May 9-11, 1898 | Ohio | Oct. 22-24, 1898. | Ohio |
| Ohio Volunteer Artillery: | | | | |
| First Battalion | May 11, 1898 | Columbus, Ohio | Oct. 21-23, 1898. | Columbus, Ohio |
| Oregon Volunteer Infantry: | | | | |
| Second | May 7-15, 1898 | Portland, Oreg | Aug. 7, 1899 | San Francisco, Cal. |
| Oregon Volunteer Light Artillery: | | | | |
| Battery A | July 1, 1898 | do | Oct. 15, 1898 | Vancouver Barracks, Wash. |
| Battery B | July 26, 1898 | do | Oct. 20, 1898 | Portland, Oreg |
| Pennsylvania Volunteer Infantry: | | | | |
| First | May 10-11, 1898. | Mount Gretna, Pa. | Oct. 26, 1898 | Philadelphia, Pa. |
| Second | May 10-13, 1898. | do | Nov. 15, 1898 | do |
| Third | May 9-July 22, 1898. | Pennsylvania | Oct. 22, 1898 | do |
| Fourth | May 9-July 6, 1898. | do | Nov. 16, 1898 | Pennsylvania |
| Fifth | May 11-July 20, 1898. | do | Nov. 7-11, 1898 | do |
| Sixth | May 10-13, 1898 | Mount Gretna, Pa. | Oct. 17, 1898 | do |
| Eighth | May 11-12, 1898 | do | Mar. 7, 1899 | Augusta, Ga |
| Ninth | May 11-July 12, 1898. | Pennsylvania | Oct. 29, 1898 | Pennsylvania |
| Tenth | May 11-12, 1898 | Mount Gretna, Pa. | Aug. 22, 1899 | San Francisco, Cal. |
| Twelfth | May 11-13, 1898 | do | Oct. 29, 1898 | Pennsylvania |
| Thirteenth | May 12-13, 1898 | do | Mar. 11, 1899 | Augusta, Ga |
| Fourteenth | May 12, 1898 | do | Feb. 28, 1899 | Summerville, S. C. |
| Fifteenth | May 10-11, 1898 | do | Jan. 31, 1899 | Athens, Ga |
| Sixteenth | May 10-July 18, 1898. | Pennsylvania | Dec. 22-29, 1898. | Pennsylvania |
| Eighteenth | May 11-13, 1898 | Mount Gretna, Pa. | Oct. 22, 1898 | Pittsburg, Pa. |

[1] Colored troops.

*the war with Spain, with losses from all causes, etc., as shown by muster-out rolls*—Cont'd.

| Strength at muster in. | | Strength at muster out. | | Total number accounted for on muster-out roll. | | Losses while in service. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Officers. | | | | | | |
| | | | | | | | | | Died. | | | |
| Officers. | Men. | Officers. | Men. | Officers. | Men. | Promoted or transferred. | Resigned or discharged. | Dismissed. | Killed in action. | Of wounds. | Disease. | Accident. |
| 50 | 932 | 50 | 1,028 | 60 | 1,387 | ...... | 10 | ...... | ...... | ...... | ...... | ...... |
| 52 | 930 | 49 | 1,213 | 54 | 1,342 | 1 | 4 | ...... | ...... | ...... | ...... | ...... |
| 43 | 978 | 40 | 1,022 | 50 | 1,073 | ...... | 9 | ...... | ...... | ...... | ...... | 1 |
| 27 | 658 | 31 | 507 | 48 | 671 | ...... | 17 | ...... | ...... | ...... | ...... | ...... |
| 43 | 896 | 50 | 1,257 | 54 | 1,321 | ...... | 4 | ...... | ...... | ...... | ...... | ...... |
| 48 | 874 | 50 | 1,163 | 54 | 1,278 | ...... | 4 | ...... | ...... | ...... | ...... | ...... |
| 43 | 913 | 50 | 1,246 | 53 | 1,297 | ...... | 1 | ...... | ...... | ...... | 2 | ...... |
| 50 | 842 | 49 | 1,210 | 53 | 1,297 | 3 | 1 | ...... | ...... | ...... | ...... | ...... |
| 47 | 913 | 49 | 1,221 | 49 | 1,296 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 46 | 874 | 46 | 1,055 | 65 | 1,330 | 7 | 11 | ...... | ...... | ...... | 1 | ...... |
| 49 | 872 | 49 | 1,117 | 52 | 1,311 | ...... | 2 | ...... | ...... | ...... | 1 | ...... |
| 48 | 838 | 50 | 1,180 | 60 | 1,286 | ...... | 6 | ...... | ...... | ...... | 4 | ...... |
| 16 | 314 | 16 | 395 | 19 | 440 | ...... | 3 | ...... | ...... | ...... | ...... | ...... |
| 42 | 1,280 | 46 | 1,129 | 55 | 1,283 | ...... | 9 | ...... | ...... | ...... | ...... | ...... |
| 33 | 555 | 33 | 763 | 39 | 883 | ...... | 6 | ...... | ...... | ...... | ...... | ...... |
| 20 | 386 | 20 | 671 | 20 | 710 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 50 | 970 | 44 | 1,024 | 56 | 1,296 | ...... | 12 | ...... | ...... | ...... | ...... | ...... |
| 3 | 106 | 3 | 104 | 3 | 106 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 3 | 106 | 3 | 106 | 3 | 106 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 40 | 754 | 41 | 992 | 49 | 1,119 | ...... | 7 | ...... | ...... | ...... | 1 | ...... |
| 40 | 754 | 25 | 391 | 42 | 1,079 | ...... | 17 | ...... | ...... | ...... | ...... | ...... |
| 40 | 816 | 42 | 877 | 45 | 983 | ...... | 3 | ...... | ...... | ...... | ...... | ...... |
| 47 | 1,014 | 45 | 1,211 | 50 | 1,261 | ...... | 2 | ...... | ...... | ...... | 3 | ...... |
| 41 | 1,022 | 48 | 1,231 | 49 | 1,278 | ...... | 1 | ...... | ...... | ...... | ...... | ...... |
| 50 | 927 | 50 | 1,223 | 51 | 1,331 | ...... | 1 | ...... | ...... | ...... | ...... | ...... |
| 41 | 774 | 41 | 949 | 49 | 1,074 | ...... | 8 | ...... | ...... | ...... | ...... | ...... |
| 41 | 623 | 46 | 1,224 | 56 | 1,301 | 2 | 5 | ...... | ...... | ...... | 3 | ...... |
| 36 | 604 | 33 | 736 | 42 | 892 | ...... | 8 | ...... | ...... | ...... | 1 | ...... |
| 36 | 604 | 35 | 829 | 36 | 867 | ...... | ...... | ...... | ...... | ...... | 1 | ...... |
| 36 | 604 | 36 | 759 | 37 | 858 | ...... | 1 | ...... | ...... | ...... | ...... | ...... |
| 36 | 604 | 35 | 687 | 50 | 860 | ...... | 15 | ...... | ...... | ...... | ...... | ...... |
| 36 | 604 | 33 | 675 | 41 | 842 | ...... | 7 | ...... | ...... | ...... | 1 | ...... |
| 47 | 1,028 | 48 | 1,238 | 50 | 1,307 | ...... | 2 | ...... | ...... | ...... | ...... | ...... |
| 34 | 604 | 34 | 837 | 36 | 857 | ...... | 2 | ...... | ...... | ...... | ...... | ...... |

**N.**—*Table showing strength of volunteer forces called into service of the United States during*

| Organization. | Losses while in service. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Officers. | | | | Enlisted men. | | | | | | | | | | |
| | Died. | | | Total. | | Discharged. | | | Died. | | | | | | |
| | Drowned. | Suicide. | Murdered. | | Transferred. | Disability. | By sentence of general court-martial. | By order. | Killed in action. | Of wounds received in action. | Of disease. | Accident. | Drowned. | Suicide. | Murdered or homicide. |
| Pennsylvania Volunteer Cavalry: | | | | | | | | | | | | | | | |
| Philadelphia City Troop. | | | | | | 1 | | 20 | | | 1 | | | | |
| Governor's Troop | | | | | | 2 | | 1 | | | | | | | |
| Sheridan's Troop | | | | 1 | | | | 1 | | | | | | | |
| Pennsylvania Volunteer Artillery: | | | | | | | | | | | | | | | |
| Light Battery A | | | | 1 | | | | 14 | | | 4 | | | | |
| Light Battery B | | | | | | 1 | | 1 | | | 1 | | | | |
| Light Battery C | | | | 2 | | | | 2 | | | 4 | | | | |
| Rhode Island Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | | | | 23 | 78 | 35 | 13 | 100 | | | 11 | 1 | | | |
| Rhode Island Volunteer Artillery: | | | | | | | | | | | | | | | |
| Light Batteries A and B | | | | 2 | | | | | | | | | | | |
| South Carolina Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | | | | 4 | 35 | 12 | | 66 | | | 18 | | | | |
| Second | | | | 1 | 14 | 22 | 3 | 114 | | | 19 | | | | |
| South Carolina Volunteer Artillery: | | | | | | | | | | | | | | | |
| Heavy Battery | | | | | | 11 | 1 | 26 | | | 1 | | | | 1 |
| South Dakota Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | 1 | | | 24 | 58 | 59 | 6 | 255 | 20 | 4 | 35 | 1 | | | |
| Tennessee Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | | | | 35 | 642 | 87 | 4 | 544 | 1 | | 23 | 2 | | | |
| Second | | | | 6 | 39 | 63 | 1 | 75 | | | 14 | | | 1 | |
| Third | | | | 3 | 40 | 21 | | 38 | | | 18 | | | 1 | |
| Fourth | | | | 8 | 87 | 15 | 3 | 51 | | | 16 | 2 | | | 1 |
| Texas Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | | | | 14 | 46 | 57 | 3 | 379 | | | 14 | 1 | | | |
| Second | | | | 4 | 110 | 50 | 1 | 56 | | | 15 | | | | |
| Third | | | | 3 | 4 | 89 | | 230 | | | 14 | 1 | | | |
| Fourth | | | | 1 | | 15 | 2 | 298 | | | 11 | | | | |
| Texas Volunteer Cavalry: | | | | | | | | | | | | | | | |
| First | | | | 7 | 8 | 24 | | 151 | | | 3 | 1 | | | 1 |
| Utah Volunteer Artillery: | | | | | | | | | | | | | | | |
| Field and staff | | | | 1 | | | | | | | | | | | |
| Light Battery A | | | | 3 | | 6 | | 31 | 4 | | 4 | | | | |
| Light Battery B | | | | 3 | | 6 | | 29 | 2 | 2 | 1 | | | | |
| Light Battery C | | | | | | 10 | | 2 | | | | | | | |
| Utah Volunteer Cavalry: | | | | | | | | | | | | | | | |
| First | | | | | | 6 | | 7 | | | 1 | | | | |
| Vermont Volunteer Infantry: | | | | | | | | | | | | | | | |
| First | | | | 3 | 30 | | | 9 | | | 26 | | | | |
| Virginia Volunteer Infantry: | | | | | | | | | | | | | | | |
| Second | | | | 2 | 24 | 10 | | 76 | | | 20 | | 1 | | |
| Third | | | | 6 | 16 | 26 | 1 | 56 | | | 12 | | | 1 | |
| Fourth | | | | 11 | 65 | 63 | 5 | 326 | | | 30 | | | | |
| Sixth[1] | | | | 9 | 7 | 2 | 2 | 3 | | | 2 | | | | 2 |

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[1] Colored troops.

*the war with Spain, with losses from all causes, etc., as shown by muster-out rolls*—Cont'd.

| Losses while in service. | | Memoranda. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Enlisted men. | | Wounded | | Service beyond the United States. | | | | |
| | | | | Place. | Date. | | | |
| Deserted. | Total. | Officers. | Enlisted men. | Where. | Leaving the United States. | Arrival in foreign country. | Leaving foreign country. | Returned to the United States. |
| 12 | 178 | .... | ...... | Cuba ........... | Aug. 17, 1898 | Aug. 22, 1898 | Apr. 26, 1899 | Apr. 30, 1899 |
| 25 | 101 | .... | ...... | ................ | ............... | ............... | ............... | |
| 29 | 147 | .... | ...... | ................ | ............... | ............... | ............... | |
| 3,069 | 86,692 | 90 | 1,189 | | | | | |

N.—*Table showing strength of volunteer forces called into service of the United States during*

RECAPITULATION

| | Strength at muster in. | | Strength at muster out. | | Total number accounted for on muster-out roll. | | Losses while in service. | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Officers. | | |
| | Officers. | Men. | Officers. | Men. | Officers. | Men. | Promoted or transferred. | Resigned or discharged. | Dismissed. |
| General officers and staff | [1] 1,010 | 1,829 | 254 | ........ | 1,010 | 1,329 | 33 | 703 | .... |
| Alabama | 141 | 3,061 | 144 | 3,007 | 158 | 3,864 | 3 | 10 | .... |
| Arkansas | 91 | 1,934 | 92 | 2,049 | 108 | 2,728 | .... | 15 | .... |
| California | 186 | 4,441 | 196 | 4,587 | 232 | 5,587 | .... | 35 | .... |
| Colorado | 49 | 1,076 | 49 | 1,041 | 70 | 1,367 | 7 | 13 | .... |
| Connecticut | 100 | 2,436 | 103 | 2,850 | 124 | 3,127 | .... | 20 | .... |
| District of Columbia | 49 | 922 | 49 | 810 | 53 | 937 | .... | 3 | .... |
| Delaware | 47 | 969 | 43 | 836 | 51 | 977 | .... | 8 | .... |
| Florida | 48 | 956 | 48 | 1,135 | 54 | 1,296 | .... | 5 | .... |
| Georgia | 142 | 3,389 | 144 | 3,094 | 165 | 4,218 | .... | 20 | .... |
| Idaho | 32 | 644 | 32 | 444 | 50 | 678 | .... | 17 | .... |
| Illinois | 489 | 10,453 | 487 | 11,667 | 547 | 13,100 | 4 | 49 | 1 |
| Indiana | 260 | 5,564 | 259 | 6,408 | 281 | 7,142 | 1 | 18 | .... |
| Iowa | 206 | 3,354 | 202 | 4,403 | 230 | 5,464 | 1 | 23 | .... |
| Kansas | 167 | 3,735 | 166 | 3,957 | 229 | 4,795 | .... | 55 | 1 |
| Kentucky | 186 | 4,559 | 199 | 4,756 | 217 | 5,397 | 1 | 17 | .... |
| Louisiana | 101 | 2,255 | 96 | 2,223 | 122 | 2,794 | 2 | 17 | .... |
| Maine | 61 | 1,444 | 61 | 1,668 | 67 | 1,826 | 1 | 3 | .... |
| Maryland | 91 | 1,979 | 98 | 2,299 | 114 | 2,597 | .... | 15 | .... |
| Massachusetts | 277 | 5,515 | 274 | 6,100 | 321 | 6,792 | 2 | 37 | .... |
| Michigan | 233 | 5,185 | 231 | 5,655 | 262 | 6,579 | .... | 26 | .... |
| Minnesota | 196 | 4,222 | 196 | 4,462 | 229 | 5,151 | .... | 30 | .... |
| Mississippi | 108 | 2,512 | 115 | 2,695 | 125 | 3,036 | .... | 8 | .... |
| Missouri | 271 | 6,234 | 278 | 6,978 | 327 | 8,083 | 1 | 45 | .... |
| Montana | 48 | 976 | 48 | 673 | 78 | 1,054 | .... | 28 | .... |
| Nebraska | 137 | 3,232 | 136 | 2,938 | 200 | 3,846 | 23 | 36 | .... |
| Nevada | 15 | 481 | 16 | 327 | 17 | 505 | .... | 1 | .... |
| New Hampshire | 47 | 952 | 47 | 1,234 | 60 | 1,309 | .... | 10 | .... |
| New Jersey | 184 | 4,163 | 193 | 4,522 | 237 | 5,264 | .... | 44 | .... |
| New York | 705 | 15,924 | 717 | 17,238 | 927 | 19,937 | 29 | 171 | .... |
| North Carolina | 145 | 2,840 | 139 | 3,263 | 164 | 3,802 | 1 | 23 | .... |
| North Dakota | 27 | 658 | 31 | 507 | 48 | 671 | .... | 17 | .... |
| Ohio | 485 | 9,557 | 508 | 12,407 | 573 | 13,682 | 10 | 47 | .... |
| Oregon | 56 | 1,182 | 50 | 1,234 | 62 | 1,508 | .... | 12 | .... |
| Pennsylvania | 619 | 11,696 | 614 | 14,636 | 709 | 16,739 | 3 | 82 | .... |
| Rhode Island | 54 | 1,170 | 51 | 1,251 | 76 | 1,578 | 7 | 18 | .... |
| South Carolina | 90 | 2,060 | 99 | 2,077 | 104 | 2,514 | .... | 4 | .... |
| South Dakota | 46 | 983 | 46 | 622 | 70 | 1,064 | .... | 20 | .... |
| Tennessee | 187 | 4,148 | 183 | 3,993 | 235 | 6,031 | 9 | 40 | .... |
| Texas | 231 | 5,054 | 230 | 4,824 | 259 | 6,506 | 1 | 27 | .... |
| Utah | 15 | 429 | 16 | 443 | 23 | 555 | .... | 7 | .... |
| Vermont | 48 | 980 | 49 | 925 | 52 | 992 | .... | 2 | .... |
| Virginia | 164 | 3,709 | 166 | 4,249 | 194 | 5,029 | 5 | 21 | .... |
| Washington | 60 | 1,379 | 60 | 1,180 | 87 | 1,767 | .... | 25 | .... |
| West Virginia | 88 | 2,245 | 92 | 2,196 | 110 | 2,584 | .... | 17 | 1 |
| Wisconsin | 198 | 4,293 | 195 | 4,863 | 211 | 5,242 | 1 | 11 | 2 |
| Wyoming | 17 | 446 | 17 | 296 | 23 | 453 | .... | 5 | .... |
| United States Volunteers | 763 | 16,992 | 780 | 14,499 | 1,003 | 18,717 | 53 | 155 | 3 |
| Total | 8,970 | 173,717 | [1] 8,299 | 183,521 | [2] 10,668 | [2][3] 220,213 | 198 | 2,015 | 8 |

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[1] On the lines of the general officers and staff corps, in the column under the heading, "Strength at muster in," the total number appointed or enlisted is shown, and in the column under the heading, "Strength at muster out," the number remaining in service November 30, 1899, is stated.

[2] From this total should be deducted the number of officers and enlisted men accounted for under the headings, "Promoted" or "Transferred," as they were promoted or transferred in their own regiments, or to other organization in the volunteer service, therefore being no loss; also 453 officers of the Regular Army who held commissions in the volunteers.

[3] From this total should be deducted 891, this number having been appointed to be commissioned officers, and so accounted for.

[4] Includes 4 Regular Army officers holding volunteer commissions.

*the war with Spain, with losses from all causes, etc., as shown by muster-out rolls*—Cont'd.

BY STATES, ETC.

| Losses while in service. | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Officers. | | | | | | | | Enlisted men. | | | | | | | | | | | | |
| Died. | | | | | | | | | Discharged. | | | Died. | | | | | | | | |
| Killed in action. | Of wounds. | Disease. | Accident. | Drowned. | Suicide. | Murdered. | Total. | Transferred. | Disability. | By sentence of general court-martial. | By order. | Killed in action. | Of wounds received in action. | Of disease. | Accident. | Drowned. | Suicide. | Murdered or homicide. | Deserted. | Total. |
| 3 | ... | 15 | 1 | ... | 1 | ... | 756 | ...... | 9 | .... | 1,297 | .... | .... | 19 | 3 | ... | ... | ... | 1 | 1,329 |
| .... | ... | 1 | ... | ... | ... | ... | 14 | 410 | 78 | 4 | 147 | .... | .... | 37 | 3 | 1 | ... | 3 | 174 | 857 |
| .... | ... | 1 | ... | ... | ... | ... | 16 | 135 | 115 | 2 | 313 | .... | .... | 49 | 2 | ... | ... | ... | 63 | 679 |
| .... | 1 | .... | ... | ... | ... | ... | 36 | 104 | 145 | 7 | 615 | 8 | 1 | 60 | 2 | 1 | 2 | 1 | 54 | 1,000 |
| 1 | ... | .... | ... | ... | ... | ... | 21 | 32 | 53 | 5 | 198 | 5 | 6 | 22 | ... | 1 | 1 | ... | 3 | 326 |
| .... | ... | 1 | ... | ... | ... | ... | 21 | 13 | 24 | 12 | 132 | .... | .... | 38 | ... | ... | ... | ... | 58 | 277 |
| .... | ... | 1 | ... | ... | ... | ... | 4 | 32 | 8 | .... | 65 | .... | .... | 22 | ... | ... | ... | ... | ...... | 127 |
| .... | ... | .... | ... | ... | ... | ... | 8 | 2 | 8 | 3 | 74 | .... | .... | 8 | ... | ... | ... | ... | 46 | 141 |
| .... | ... | 1 | ... | ... | ... | ... | 6 | 24 | 31 | 1 | 57 | .... | .... | 27 | ... | ... | ... | 2 | 19 | 161 |
| .... | ... | 1 | ... | ... | ... | ... | 21 | 131 | 79 | 5 | 754 | .... | .... | 50 | 3 | ... | ... | ... | 102 | 1,124 |
| 1 | ... | .... | ... | ... | ... | ... | 18 | 22 | 25 | 8 | 156 | 4 | 2 | 13 | 1 | 1 | ... | ... | 2 | 234 |
| .... | ... | 5 | 1 | ... | ... | ... | 60 | 285 | 239 | 6 | 582 | .... | .... | 274 | 6 | ... | ... | 1 | 40 | 1,433 |
| .... | ... | 3 | ... | ... | ... | ... | 22 | 214 | 132 | .... | 274 | .... | .... | 66 | 2 | ... | ... | 1 | 45 | 734 |
| .... | ... | 3 | ... | ... | 1 | ... | 28 | 133 | 120 | .... | 642 | 1 | .... | 158 | 1 | ... | ... | ... | 6 | 1,061 |
| 3 | ... | 4 | ... | ... | ... | ... | 63 | 129 | 177 | 9 | 385 | 19 | 11 | 78 | 1 | ... | ... | 1 | 28 | 838 |
| .... | ... | .... | ... | ... | ... | ... | 18 | 120 | 95 | 8 | 197 | .... | .... | 84 | 3 | ... | ... | 2 | 132 | 641 |
| .... | ... | 7 | ... | ... | ... | ... | 26 | 163 | 166 | 5 | 154 | .... | .... | 24 | 2 | 1 | ... | 1 | 55 | 571 |
| .... | ... | 2 | ... | ... | ... | ... | 6 | 22 | 16 | 1 | 30 | .... | .... | 49 | ... | ... | ... | ... | 40 | 158 |
| .... | ... | 1 | ... | ... | ... | ... | 16 | 28 | 40 | 7 | 135 | .... | .... | 31 | 1 | ... | ... | ... | 56 | 298 |
| 1 | ... | 7 | ... | ... | ... | ... | 47 | 111 | 95 | 1 | 180 | 4 | 4 | 265 | 1 | ... | ... | ... | 31 | 692 |
| .... | ... | 5 | ... | ... | ... | ... | 31 | 160 | 93 | 4 | 426 | 2 | 1 | 200 | 1 | 1 | ... | ... | 36 | 924 |
| .... | 1 | 2 | ... | ... | ... | ... | 33 | 90 | 114 | 5 | 371 | 4 | 2 | 80 | 2 | 1 | 1 | ... | 19 | 689 |
| .... | ... | 2 | ... | ... | ... | ... | 10 | 68 | 28 | 1 | 115 | .... | .... | 56 | 1 | ... | ... | ... | 72 | 341 |
| .... | ... | 3 | ... | ... | ... | ... | 49 | 198 | 184 | 3 | 470 | .... | .... | 107 | 6 | 2 | ... | ... | 135 | 1,105 |
| 1 | ... | 1 | ... | ... | ... | ... | 30 | 71 | 29 | 4 | 232 | 12 | 8 | 14 | ... | 1 | ... | ... | 10 | 381 |
| 2 | 1 | 2 | ... | ... | ... | ... | 64 | 35 | 78 | 3 | 667 | 19 | 13 | 84 | ... | 1 | ... | ... | 8 | 908 |
| .... | ... | .... | ... | ... | ... | ... | 1 | ...... | 4 | 3 | 166 | .... | .... | 1 | ... | ... | ... | ... | 4 | 178 |
| .... | ... | 3 | ... | ... | ... | ... | 13 | 14 | 6 | .... | 13 | .... | .... | 29 | ... | ... | ... | ... | 13 | 75 |
| .... | ... | .... | ... | ... | ... | ... | 44 | 73 | 81 | 10 | 458 | .... | .... | 38 | 1 | 1 | ... | ... | 80 | 742 |
| .... | ... | 10 | ... | ... | ... | ... | 210 | 290 | 310 | 20 | 1,148 | 12 | 3 | 380 | 15 | 2 | 3 | 2 | 514 | 2,699 |
| .... | ... | .... | 1 | ... | ... | ... | 25 | 25 | 182 | 8 | 184 | .... | .... | 59 | 1 | ... | ... | 3 | 77 | 539 |
| .... | ... | .... | ... | ... | ... | ... | 17 | 23 | 18 | .... | 105 | 6 | 1 | 9 | 1 | 1 | ... | ... | ...... | 164 |
| .... | ... | 8 | ... | ... | ... | ... | 65 | 252 | 186 | 5 | 534 | 1 | .... | 219 | 4 | ... | ... | 1 | 73 | 1,275 |
| .... | ... | .... | ... | ... | ... | ... | 12 | 45 | 36 | .... | 135 | 13 | 3 | 38 | 1 | ... | ... | ... | 3 | 274 |
| .... | ... | 10 | ... | ... | ... | ... | 95 | 288 | 165 | 9 | 1,338 | 12 | 4 | 216 | 4 | 2 | 1 | ... | 64 | 2,103 |
| .... | ... | .... | ... | ... | ... | ... | 25 | 78 | 35 | 13 | 100 | .... | .... | 11 | 1 | ... | ... | ... | 89 | 327 |
| .... | ... | 1 | ... | ... | ... | ... | 5 | 49 | 45 | 4 | 206 | .... | .... | 38 | ... | ... | ... | 1 | 94 | 437 |
| 3 | ... | .... | ... | 1 | ... | ... | 24 | 58 | 59 | 6 | 255 | 20 | 4 | 35 | 1 | ... | ... | ... | 4 | 442 |
| .... | ... | 3 | ... | ... | ... | ... | 52 | 808 | 186 | 8 | 708 | 1 | .... | 71 | 4 | ... | 2 | 1 | 249 | 2,038 |
| .... | ... | 1 | ... | ... | ... | ... | 29 | 168 | 235 | 6 | 1,114 | .... | .... | 57 | 3 | ... | ... | 1 | 98 | 1,682 |
| .... | ... | .... | ... | ... | ... | ... | 7 | ...... | 28 | .... | 69 | 6 | 2 | 6 | ... | ... | ... | ... | 1 | 112 |
| .... | ... | 1 | ... | ... | ... | ... | 3 | 30 | ...... | .... | 9 | .... | .... | 26 | ... | ... | ... | ... | 2 | 67 |
| .... | ... | 2 | ... | ... | ... | ... | 28 | 112 | 101 | 8 | 461 | .... | .... | 64 | ... | 1 | 1 | 2 | 30 | 780 |
| 1 | ... | 1 | ... | ... | ... | ... | 27 | 87 | 81 | 2 | 345 | 17 | 8 | 18 | ... | 1 | ... | ... | 28 | 587 |
| .... | ... | .... | ... | ... | ... | ... | 18 | 67 | 34 | 3 | 169 | .... | .... | 31 | 3 | ... | ... | ... | 81 | 388 |
| .... | ... | 2 | ... | ... | ... | ... | 16 | 118 | 21 | 13 | 91 | 2 | .... | 126 | ... | ... | ... | ... | 8 | 379 |
| .... | ... | .... | ... | ... | 1 | ... | 6 | 17 | 18 | 5 | 86 | 1 | 2 | 12 | ... | ... | ... | ... | 16 | 157 |
| 2 | ... | 9 | 1 | ... | ... | ... | 223 | 770 | 532 | 38 | 2,192 | 21 | 3 | 330 | 17 | 2 | ... | 7 | 306 | 4,218 |
| [4] 18 | 3 | 119 | 4 | 1 | 3 | ... | [2] 2,369 | 6,104 | 4,544 | 265 | [3] 18,554 | 190 | 78 | 3,729 | 97 | 21 | 11 | 30 | 3,069 | [2] 36,692 |

The total number therefore furnished was—

| | |
|---|---|
| Officers | 10,017 |
| Enlisted men | 213,218 |
| Total | 223,235 |

ADJUTANT-GENERAL'S OFFICE,
*Washington, D. C., October 1, 1900.*

# REPORT OF THE INSPECTOR-GENERAL TO THE SECRETARY OF WAR.

# REPORT

OF THE

# INSPECTOR-GENERAL OF THE ARMY.

War Department, Inspector-General's Office,
*Washington, D. C., September 29, 1900.*

Sir: I have the honor to submit the following report of the operations of this department during the past year, in addition to the matters relating to discipline, etc., which have been submitted to the Lieutenant-General Commanding the Army, under General Orders No. 28, H. Q. A., 1876.

The magnitude and importance of the work performed during the year and the benefits and economy effected by it may be better appreciated if both branches of work are considered together. But when the inspections of money and articles are measured by the million and still are not too fully appreciated by those who do not have the work to do, it may be due to those who bear its burden to invite some attention to it for the very work's sake. That these gentlemen have done the State some service of this modest sort without attracting much attention may be illustrated by the successive months of arduous and skillful work by the accountant of this Bureau, Mr. Wm. T. Kent, in the Antilles; first in Porto Rico under Colonel Heyl and by the request of General Davis, where financial matters were taken in time and have proceeded creditably and regularly, and then in Cuba after the climax and publicity were reached and the effort to restore regularity was in progress. And what others, both commissioned and civilian officials, have done is well worthy of individual mention: and considerate attention is, with some hesitation, invited to not only the volume, but the intelligent faithfulness and the not unimportant success of their work.

Since the rendition of the last annual report the military establishment has undergone important changes. Perhaps no two battles in one year ever had so much effect upon the history and destiny of our country as those of Manila and Santiago in May and July, 1898. The last of the State volunteer troops who did such excellent service in the Philippines and elsewhere, and whose military experience and the results flowing from it promise so great an influence upon our national history, were returned to this country and mustered out; and their places were filled by the new United States volunteer regiments, which were organized under the act of March 2, 1899, and comprise 1 regiment of cavalry, 24 regiments of infantry, 1 Porto Rican regiment, and 1 squadron of Philippine cavalry, numbering in all about 35,000 men. Two of the infantry regiments and the regiment and squadron of cavalry were organized in the Philippines, all from Americans, except the squadron of cavalry and some scouts from natives. The Porto Rican regiment was organized in Porto Rico, also from the natives. And the remaining 22 regiments were organized in the United States, 2 (the Forty-eighth and Forty-ninth) being composed of colored men; and all, except the Porto Rican troops, have served in the Philippine Islands, the first (Thirty-fourth) arriving at Manila October 11, 1899, and the last (Forty-eighth) January 25, 1900.

Conditions in Cuba and our new possessions have become more settled; but occurrences in China caused new complications and required a large force, some from the United States and some from the Philippines, to be transferred to Chinese soil. And the gallant work against the Boxers and the rescue of beleagured legations and the conduct of the command under General Chaffee (who was formerly on duty with the Inspector-General's Department) are too recent to need more than mention here, except to share the sorrow of all for our fallen comrades and in bestowing hearty commendation by all for such soldierly conduct.

In the Inspector-General's Department the year is marked by unusual activity. The inspections of disbursements and deposits amounted to over $280,000,000, of property to over $10,000,000, with over $1,000,000 saved for further service, and of over 130,000 men. And in addition to the usual inspections of military posts, supply depots, arsenals, armories, recruiting stations, hospitals, national cemeteries, and Soldiers' Homes, it may be proper to mention the inspection of the United States volunteer regiments before leaving this country, the organization of a systematic general inspection service of transports, the inspection of West Point from this office, and the resumption of inspections of military institutions having army details and United States arms and equipments. With inspections from the arctic to the southern tropic zones and from Porto Rico to the Philippines the length and breadth of the land and water involved has changed like a transformation. In our annual work rather beyond the ordinary routine duty the year is also marked by a disclosure, by Colonel Burton, the inspector-general of the Division of Cuba, of the Cuban postal frauds, which is the only one reported during the year and not immediately made good. But most impressive of all to us is our loss in the premature death, December 19, 1899, on the battlefield of the gallant Lawton, who was an officer of this corps, and in the death of Lieutenant-Colonel Miley, inspector-general of volunteers, who died September 19, 1899, while performing double duty as chief inspector-general of that command and also as collector of customs of the port of Manila, whose death was noted in last year's report, and in the death of Major Edmunds, June 18, 1900, who was serving in this department when he succumbed to yellow fever. We can not disregard our personal loss nor the quality of such worthy soldiers as these. But even to strangers a loss of over 10 per cent of the corps by death during the last fiscal year may attract attention to services which surely have not been performed in any perfunctory spirit, and it is hoped may be appreciated by our superiors and our fellow-countrymen.

The detailed reports of the inspections made from time to time have been brought to the attention of the proper authorities, and the commendations mentioned by the inspectors have been repeated upon the records, and the criticisms of the inspectors and the defects disclosed have generally received prompt remedial action wherever possible; and everything assigned to this department has received faithful and thorough attention, and the results accomplished indicate continued efficiency and generally economic administration. How very much encouraged and less hampered inspection work has been during this fiscal year goes without saying and is most encouraging.

### BRIGADE INSPECTORS-GENERAL.

The experience gained in the organization and mobilization of the volunteers during the Spanish war has again developed the fact that an inspector-general for each brigade would have been of immense benefit to the Army, and a provision in the law to that effect is desirable. General Lawton acted as inspector-general of brigade during the civil war; so, recognizing its benefits, it is not surprising that he instituted a similar system in his division during recent military operations. Even in peace times our brigadier-generals habitually have inspectors-general assigned to their staff.

In addition to the inspection of disbursements, property, and places for the information of higher authority, it is also the special duty of the corps of inspectors-general to obtain direct knowledge of the individual soldiers and organizations and their equipment, and note their deficiencies or excellence and aid their supply. It can hardly be generally believed that any unnecessary discomfort or suffering of the men will be equally well guarded against and their wants equally promptly provided for without well-directed inspections. "A chiel among ye taking notes" has its uses, though always so kindly disposed.

The act for increasing the efficiency of the Army approved March 2, 1899, gives a certain amount of elasticity in providing for general officers—a major-general for 12,000 troops and a brigadier-general for each 4,000; but only a fixed number, and that inadequate, of inspectors-general was allowed to meet all the contingencies of the expanding organization, thus rendering it almost impossible for each command to have its full complement of competent officers to superintend the work at every stage. A niggardly supply of capable officers for every essential duty in war is a "penny-wise and pound-foolish" policy, and resulted, as necessity knows no law, in the regiments suffering in more ways than one. Nor is it held to be wholly wise to have ours the only army unprovided with suitable rank for any command larger than 20,000 men in the field.

As the company, battery, or troop is the unit of the battalion and regimental organization, so the brigade becomes the unit for the organization of a division or corps; and the corps is the tactical unit for separate armies. And in the earlier or formative stages the companies should have present for duty their full allowance of officers to have charge of all the details of raising, organizing, equipping, disciplining, and instructing the raw levies; while each brigade, especially in the incipient stages, should have a full complement of staff officers, particularly inspectors-general, to aid in the thousand and one things necessary to be done and also to advise, instruct, or direct the inexperienced and zealous, and to insure immediately that supplies and transportation, orderliness, cleanliness, hygiene, cooking arrangements, camping places, drill grounds, guard duty, and every military exercise and practice, from musketry to surprising a fortification, are all right. If his commanding officer wishes his inspector to have much or nothing to do with any or all of these things, so be it. He is simply on hand for the military duties desired of him; and in this drama his part is eldom ill played, but when it is omitted there is the mischief to play.

The need of brigade inspectors-general has been clearly recognized by those best able to appreciate their necessity in every military emergency since the foundation of the Government till now. They were adopted under Washington, as well as under Lee and Lawton. Doubtless the necessity can sometimes be met by the temporary detail of other officers to do the work; but they should be provided for by law, so that the evils of depleting the commands of its necessary officers can be avoided. And the necessity for experienced and capable inspectors of adequate rank for army corps and separate armies can be pressed upon similar grounds. And experience in other branches of business does not necessarily produce an efficient inspector; he should be experienced and found efficient in inspection duty.

It may be well to repeat that in the Seventh Army Corps, commanded by Gen. Fitzhugh Lee, one of the most completely organized corps which went to Cuba, brigade inspectors-general were detailed upon the staffs of the brigade commanders with most excellent results; and when General Lawton, an experienced inspector-general himself, assumed command of the Second Division of the Eighth Army Corps in the Philippine Islands, he detailed inspectors-general for each brigade, and no doubt much of the splendid efficiency of that division in the subsequent campaigns was due to those thorough inspections. At the other extreme, as there is no law authorizing any inspector-general for a separate army, but one was actually performing the duty at army headquarters, ought one of the corps commanders to try to order this inspector-general to report to him? The attempt may appear quaint, but so is the law. There is a smell of lamps rather than of field service about some of them in former days. But of course this is so no longer, for we can not desire the Army to be ridden, much less overridden, by green baize desks; and legislation well considered by a board of general officers, accustomed to command in presence of the enemy, had better be the basis of our organization and military methods.

## LEGISLATION.

The legislative needs of the Inspector-General's Department with a view to increase its efficiency may be set forth in a special communication: but it may be well, in connection with any proposed legislation, to invite attention to House Report No. 74, Forty-second Congress, third session, and to the opinions then held by prominent army officers, which appeal with equal force to existing conditions, and from which the following extracts are submitted:

[Report of Committee on Military Affairs.]

The consolidation of the Inspector's with the Adjutant-General's Department, though advocated by a few, has met with general disfavor. Their duties are but slightly akin, and the independence of the inspectors from all other branches of the line and staff can only be secured by a complete separation from them. The duties of the Adjutant-General confine him closely to his post, to his record, and to the promulgation of orders. Those of the inspector carry him over a wide field and lead him to a thorough knowledge of the entire administration of army affairs, in camps, in the field, on the march, as to its police, drill, discipline, and spirit, as well as supplies, arms, and health. An excellent adjutant might be a poor inspector, while an excellent inspector could not fail to be a good adjutant. Would it not be better that these departments should be combined, and thus add to the efficiency of the Adjutant-General's Department by placing within its reach a complete view of the whole management of the Army? With adjutants-general of such qualifications the burdens of commanders would be very greatly lightened and their efficiency increased.

Perhaps a sufficient reason for keeping these departments separate is found in the fact that the Inspector-General's Department is quite small, embracing but a few officers, and that the Adjutant-General's Department should be inspected by a separate and independent one. An important improvement in the system might be made by clothing inspectors with discretionary powers to issue orders in the name of the commander for the correction of evils discovered. The powers of inspectors in this regard should be coequal with those of adjutant-general, and it is believed there could be no possible conflict of authority or clashing under such a system.

[Maj. Gen. W. B. Franklin.]

There is, in my opinion, nothing objectionable to the consolidation of the Adjutant-General's and Inspector-General's departments, provided the inspections are rigidly kept up. The danger is that the whole corps would, in case of consolidation, become an adjutant-general's corps instead of a combined corps, because the duties of an inspector-general are much more disagreeable than those of an adjutant-general. Nothing is more conducive to the discipline of the Army than a system of inspection which shall be frequent, and searching, and rigid. An inspector should belong to each department staff and make his reports not only to the department commander, but to the chief of his corps in Washington, and he should be obliged to make his tours a specified number of times each year. Inspectors should also be sent on tours from Washington (unaccompanied by their commanding officers) under direct orders from the Secretary of War or the General of the Army, and should inspect everything from department headquarters down.

[Brig. Gen. E. D. Townsend, Adjutant-General of the Army.]

The duties of officers of the Adjutant-General's Department and of inspectors-general are entirely different, and nothing could be gained by consolidating them. Both duties can not be done at one time by the same officer, because inspection involves traveling away from the headquarters, where adjutant-general's duties must be done. If the two officers take turn about in their two separate lines, responsibility is most apt to be weakened and interest relaxed in one or both. Mercantile life will illustrate this position. A judicious merchant will not confide his books one month to one clerk and the next to another, lest if mistakes occur the responsibility drop between the two instead of falling upon the right one. Nor is the responsibility of officers of the Adjutant-General's Department imaginary. They have charge of and are accountable to the Secretary of War for records of the highest importance, which will eventually be brought to Washington as part of the nation's archives; and not even the department commander himself can interfere with that accountability.

[Maj. Gen. J. B. Fry.]

In my opinion there are no staff departments in the Army the consolidation of which would result advantageously to the service and country. To "consolidate" would be to take a step backward, only sooner or later to retrace it. The division of labor and pursuit of specialties are in conformity with a natural law, the growing operation of which marks this as an age of improvement. Proof of the force of this law is to be found in the history of the progress made of late years in every branch of science and business and in every profession and trade. The present staff organization of the Army is the result of the operation of this law in our military system. I have no more doubt that officers are "more efficient who are educated, trained, and promoted for specialties of the service" than I have that a patent lawyer is more efficient in a patent suit than a criminal or admiralty lawyer. Though it may be true that the legislation fixing our present staff system has been influenced in a few instances by personal considerations, it is a fact that this system is well adapted to our service and has the special merit of being, in the main, the result of our own experience and necessities. It is therefore far more valuable to us than the systems of other countries could be, which systems, so far as we are concerned, are mere theories. The division of labor under it is about as near the natural and proper one as we can get without further experience. Both in peace and war it has proved eminently successful for our purposes. Being the natural and proper division, it would have to come into operation sooner or later under any circumstances. Consolidation would only retard it and impair its usefulness. Feeble and irresponsible bureaus of a consolidated corps would replace the efficient and responsible departments of the present system. To reap in full the advantages which, in my judgment, inevitably follow the pursuit of specialties in the military service, these specialties should be honorable and distinctly individualized. With us they are more so now than they would be in case of consolidation.

[Brig. Gen. (Bvt.) T. M. Vincent.]

The Adjutant-General's Department could not be advantageously consolidated with the Inspector-General's.

The Adjutant-General's Department was formed for the purpose of providing and specially instructing a body of officers for the efficient discharge of the functions of chiefs and subchiefs of staff, to armies, military geographical divisions and departments, army corps, etc. Its value and necessity will be admitted if, in connection with a study of the duties properly attaching to it, we consider that its science is that of the general in chief and that there is no difference, except in degree, in the duties of a chief of staff to an army, army corps, division, or other command. Its officers may be, and are, summoned on staff duty in the war office, under the Secretary of War. While so employed their duties are administrative.

The influence its reports, and information from the records with which it is charged, may have upon the decisions of the Secretary of War, General of the Army, and other commanders, and committees of Congress make it necessary for the officers to have had a special education and to possess peculiar skill and ability. It necessarily has much to do with all the varied records of the war office, Army, and other headquarters, relating not only to the personnel and matériel of the service. The records referred to are a consequence of the Articles of War and special laws.

The duties of an officer of the Inspector-General's Department also require special and peculiar qualifications, but of a kind marked by distinctive features, the officers having to do with the inspection of the Army through every department and branch of service, and of all matters relating to its operations, embracing all fiscal concerns, discipline, and police. It is the great balance wheel of the military establishment. Its operations, therefore, extend over the Adjutant-General's Department, and for that reason, if none other, it should be independent of it; for, as its reports are with the view of correcting abuses and defects and for the advice (often confidential) of the Secretary of War and General of the Army, it would not be so likely to report on or correct abuses in its own organization, which it would be a duty to do were the two existing departments made one.

The offices of Adjutant-General and Inspector-General were, in 1775, separate; in 1796, combined; in 1798, separate; but there were assistant inspectors who were also deputy adjutants-general; in 1802, combined under the title of "Adjutant and Inspector of the Army;" in 1812, separate, and in 1813 combined. At reorganization in 1815 (when the Army ceased to be provisional in its character) the offices were not recognized by law, but in 1816 they were, and combined, so remaining until 1821, when they were finally separated.

By the act of July 5, 1838, assistant adjutants-general are made in addition to their own duties to perform those of assistant inspectors-general, when the convenience of the service requires it.

An army is efficient in proportion as its staff is well organized, and the members composing it honest, industrious, and intelligent. It will be of little avail if the individual regiments, battalions, or corps which compose an army are in a high state of discipline and well organized if the general staff which directs the whole is incompetent to fulfill its important functions. Such an army, however patriotic and gallant, would soon have to submit to one of equal, nay, of less number of troops of inferior quality under the guidance of a staff well organized, and composed of officers of experience and well versed in their various and complicated duties; for while the troops of the former description would be daily diminishing in strength and discipline under an ill-regulated and ignorant staff, the latter would be improving in force and discipline by the good management and care of its excellent staff. It is not the individual exertions of corps, however spirited, that decide a campaign; it is the talent with which they are directed as a whole, and the means employed to maintain discipline, to provide for their comfort and subsistence, and the numerous supplies requisite for carrying on the war. * * * The staff must be complete in time of war or the troops will never become efficient, but will be an irregular and expensive corps on which no reliance could be placed. It is the staff alone that can give efficiency to the service by a proper attention to the necessary supplies, organization, discipline, and accountability of all the departments of the service, regular as well as irregular. The general officers and staff officers should be selected with great care, for on them depends the successful employment of the troops and the general defense of the country. They should all be men of character, talents, and experience, in whom the nation and the Army could confide, and not those who from popular favor may for the moment have been brought into view and who in the first reverse will lose the confidence of the Army and the people.

The staff of the United States Army, the organization of which must depend upon the character of our country, "should be so organized in peace as to be capable of being extended in time of war to all the circumstances which may grow out of the exigencies of a state of war, while the principles of its organization should be unchanged thereby. It would therefore be proper that, although in time of peace acting on a miniature scale, it should be susceptible of being enlarged and extending its rules and regulations to any number of forces, however large or small, united or detached. Hence in time of peace all the regulations for the government of the staff and of every arm of the service should be settled and acted upon in order that the practice might the more readily obtain in time of war and be introduced among the new troops and the militia without difficulty or embarrassment." The requirements as enumerated can not be secured without permanency in staff positions.

[Maj. Gen. (Bvt.) W. D. Whipple.]

The Adjutant and Inspector-General's departments could not be consolidated advantageously for the reason that the duties of the two departments are entirely dissimilar. An assistant adjutant-general is by his duties required to remain at headquarters and attend to the transaction of the daily business under the direction of the commanding general, while an inspector should be occupied during the most of his time in traveling about inspecting troops and posts.

### CLERKS FOR OUTSIDE INSPECTORS-GENERAL.

The necessity for the most efficient clerical assistance to officers of this department has been recognized by all my distinguished predecessors; and the reports of Generals Marcy, Sacket, Davis, and Baird show that even in their time discrimination seemed to be made against inspecting officers in this respect, and that they repeatedly urged appropriate legislation to remedy this defect. Those who have not experienced it may not fully appreciate what a trial it has often been; and the injury it does the service has not been insignificant. The need of more and suitable clerks has probably been admitted always; perhaps even the supply departments and adjutants feel it sometimes. A good number of soldierly tempered and capable clerks is a boon even in the field. My own experience both when inspecting and when in command of Camp George H. Thomas illustrated this fully. And I see that General Bates and others there have mentioned it in the field. And now that the duties of the inspectors-general have been so greatly extended and been made, if possible, more delicate and exacting by the examination of every variety of accounts, in addition to their former specially military duties, it becomes more and more incumbent that the clerk shall be efficient, authorized, and interested, and that his position be dignified to the utmost as one of responsibility, permanence, and trust. Whose clerk is the inspector to rely upon when on such sensitive duty? Evidently it should be upon his own, if fair consideration and similar treatment can be extended to him as is shown the disbursing officers he inspects. In comparing vouchers with check stubs, for instance, more than one pair of eyes is essential.

The character of the duties of an inspector are more or less of a confidential nature, and his assistant should be one in whose discretion as well as ability he can rely. A clerk as well as an officer becomes valuable as his experience ripens and his own personal interests are wrapped up in any special vocation. At the stopping places where needed much valuable time is lost to an inspector who has to secure and educate a new clerk throughout every tour of inspection. It is believed that only the most favorable experiences under present methods have been entirely fair and justly considerate to both the duty to be performed and the clerks who perform it. Better things are hoped for and are easily given. As related to this department the present method seems at times a ludicrous and expensive as well as a questionable system. Evidently, then, the clerk should belong absolutely to the department to obtain the best service, and not be merely temporarily and insecurely attached, as they are now. The law under which clerks are assigned to duty with inspectors-general at the several department headquarters is contained in the act making appropriations for the support of the Army, and appropriates for "pay to clerks and messengers at department headquarters and headquarters of the Army," 3 clerks, at $1,800 each; 6 clerks, at $1,600 each; 21 clerks, at $1,400 each; 60, at $1,200 each, and 100, at $1,000 each; in all, 190 clerks. Naturally there are none of either of these two higher-priced grades allowed this department in the field, and but few of the third. It has proved a great worry, and relief is asked. Does not the honorable Secretary of War and the Congress believe that the inspection department should be given as capable and devoted personnel as the supply departments inspected and as fair consideration?

The extreme importance of having the clerical personnel of the Inspector-General's Department free from entanglement with any others and wholly to be relied upon by the officers with whom they serve can hardly be overestimated, especially if irregularities are to be best guarded against, and this result could be accomplished by placing them upon the same footing as clerks and messengers in the Pay Department of the Army.

It is therefore recommended that Congress be urged to insert in the next bill making appropriations for the support of the Army the following, viz:

> *Provided*, That hereafter each officer on duty in the Inspector-General's Department shall have one clerk and one messenger, and said clerks and messengers shall be appointed by the Secretary of War and receive the same pay and travel allowances as similar employees in the Pay Department of the Army.

### INSPECTORS-GENERAL OF MILITARY DIVISIONS.

The advantage and benefits to the service resulting from having an inspector-general of rank and experience and in recognized touch with the central Bureau placed in charge of the inspection work in the Military Divisions in our new possessions, and fully utilized by the generals commanding there, both in complete and thorough inspections and full and explicit reports, should be fully appreciated and secured. Soon after the assignment of Colonel Burton, though hardly in robust health, to the Division of Cuba, under the approval, direction, and support of the Division Commander a complete scheme of inspecting everything by the inspectors-general, including places, troops, property, and financial transactions, was put into operation, and the reports of these inspections came up through the department commanders to the headquarters of the Division, where they were carefully revised and the necessary action taken to remedy such defects as were under the control of the Division Commander and Military Governor, General Wood. One of the principal results accomplished was the discovery of the frauds in the postal affairs of the island, which was brought out by Colonel Burton's inspection of the accounts of the officers in charge of those funds. And a most thorough investigation of the fiscal affairs of the island was commenced by experts from the War and other Departments; and steps were taken to bring the guilty parties to trial, and stop irregularities, peculations, and thievery, and insure that affairs should be conducted with honesty, vigor, and economy. Only a part of these reports have been received in this Bureau, and you doubtless have complete information on the subject.

Similarly, under the support and direction of General MacArthur and General Otis (who while a field officer had seen service in the Inspector-General's Department), when Lieutenant-Colonel Garlington reported in the Division of the Philippines, occupied by over 50,000 troops, regular and volunteers, garrisoning more than 250 towns, and with monthly receipts from insular sources of about $7,000,000 (a little less than half of those of Cuba), a system of inspections was instituted with the happiest results, embracing everything from brigades to transports. The highly satisfactory manner in which all the duties assigned to the Army, whether military or civil, have been habitually met, is more than gratifying. The results can hardly be too highly commended. At present no officer of the Inspector-General's Department higher than the rank of major is on inspection duty in Asia; though the only public enemy is there. Lieutenant-Colonel Garlington served at those headquarters from November 23, 1899, to the last of April, 1900, when the precarious condition of his health compelled him to return to the United States and proceed to Europe upon sick leave.

### RANK AND RETIREMENT OF OFFICERS.

As a matter of simple justice it is earnestly recommended that the benefits of section 9 of the law of March 3, 1899, providing for the retirement of officers of the Navy, under certain conditions, with the rank and pay of the next higher grade, be extended to include officers of the Army. Most of our wars have been fought on land, and the services and results accomplished by the Army seem no less meritorious and attended with no less dangers than those of the Navy, and should therefore receive equal recognition. There would be a benefit to the morale of the service more than compensating for the trivial expense accompanying the consideration due these veterans of a great epoch. As far as this principle of giving an additional grade on retirement has been partially applied to certain retirements upon examination for promotion, it has proved beneficial to the service and the individual.

**Rank important.** The rank that was habitual in our Confederacy does not appear too great for our generals. If worthy of such commands and duties they are worthy of the rank properly pertaining to them; and should not wait till death for the fullest recognition of their services by their fellow-countrymen. Among those in whose career this corps felt special interest and cordial sympathy may be mentioned Lawton in the present war and Buford in the civil war. And to-day doubtless his superiors and those who serve with him appreciate the services of General Hughes under most trying circumstances, where his readiness and resolution and soldierly qualities placed him among the best. The scene in China, where our troops bore themselves so well—resolute in battle, enduring under hardships, and self-controlled amid havoc—led to making the commanding officer a major-general immediately, when he was still one of the juniors among the commanders in that international command. Our Navy fares better. The disadvantage imposed by inferior rank becomes the more prominent upon such occasions; and our country should not continually place herself at a disadvantage so unnecessarily. It may be well to note that the grade of brigadier-general is abolished in almost every army in Europe and is nearly as archaic as commodore afloat. And so it is in the higher grades that our service is most apt to suffer.

### COMPARISON IN NUMBER.

One of the most perplexing problems that is likely to engage the attention of the military authorities and Congress in the near future is the question of reorganizing the standing army on a just and proper basis. Under existing conditions, the Volunteer Army will be disbanded on July 1, 1901, and the Regular Army reduced to about 27,000. That this number will be hopelessly inadequate to garrison a hundred or more military posts in the United States, some seven or eight in Alaska, and an equal number in Porto Rico, and over two hundred and fifty in the Philippine and Hawaiian Islands, keep the regular posts and fortifications with their valuable armament and buildings in good condition, and preserve order among our Asiatic dependencies needs no argument; and the conditions confronting us and a due sense of economy imperatively demand a permanent increase in the regular military establishment, if the interests of the United States are not to suffer. And the experiences of the past two years have again illustrated how unstable is the security of a nation and how quick the step from profound peace to war and riot.

Some years ago one of our foremost generals advocated one soldier for every 1,000 of population—a most insignificant estimate compared with conditions in Europe. And recently the Hon. Charles F. Manderson, in his able address to the graduating class at the Military Academy, offered valuable statistics which seem to have an important bearing on fixing the strength of the Army on some such basis. If the President were further authorized to increase the Army on the basis of two soldiers per thousand of population for nine months in anticipation or preparation for war or in the transition stage when closing war, it would seem far more flexible, business-like, and economical than our past abrupt, haphazard, and makeshift style of legislation. This must be fairly evident to all who carefully consider the absolute requirements of such times, as to which this generation possesses some instructive experience. Will they not, before passing off the stage, place the proper legislation on the statute books to properly meet and close war without undue extravagance or unnecessary discomfort and deaths, but with timely and adequate preparation, especially well-trained reserves? Surely our Chief Magistrate can be trusted for a few months with sufficient men to safeguard the nation without sacrificing lives and treasure by haste in the first stages of war and hurried legislation then, when it is too late for the best results. The following is an extract from the address delivered by the Hon. Charles F. Manderson, president of the Board of Visitors, to the graduating class at the Military Academy, June 13, 1900:

> Armed resistance to legitimate sovereignty is on in the Philippines; war to the knife and the knife to the hilt is raging in South Africa; the marines and "Jackies" of the civilized powers are to-day in conflict with the "Boxers" in China, and the peace of Europe seems likely to be broken. Within the present year every European power, whether at peace or war (save Italy, suffering from poverty induced by an army already too large), has increased its war budget by millions of money and the number of its troops by thousands of men: France, 5,000; Germany, 33,000; Austria-Hungary, 10,000, and Great Britain, because of her South African trouble, 240,000.
>
> The Army of the United States after the civil war was reduced to 25,000, and so remained until the Spanish war. Under existing law it is to be composed of 65,000 regulars and 35,000 volunteers, the actual force at this time being 63,010 regulars and 31,856 volunteers. On July 1, 1901, all the latter are to be discharged and the Regular Army reduced to 27,415 men.
>
> When war comes it is usually the unexpected that happens. That wise and close observer, De Tocqueville, said: "War is an occurrence to which all nations are subject, democratic nations as well as all others, whatever taste they may have for peace." And I might accumulate quotations to an extent to produce satiety on the proposition that a wise nation will in peace prepare for war. * * *
>
> I have prepared three tables, which I will publish, showing the population and area of the great nations, the number of their armies in peace, and a comparative statement with the United States of the soldiers to the one thousand of population, also to the square mile of area, and the war budget of each when at peace. These tables furnish much food for thought and contain figures of fact that annihilate the figures of speech of those who would make "cowards of us all."

TABLE No. 1.—*Proportion of soldiers to population.*

| | Population. | Army in peace in 1899. | Number of soldiers to each 1,000 of population. |
|---|---|---|---|
| France | 38,517,905 | 540,405 | 14.0 |
| Germany | 52,270,901 | 587,933 | 11.3 |
| Austria-Hungary | 41,827,500 | 352,429 | 8.4 |
| Russia | 128,902,173 | 896,000 | 6.9 |
| Turkey | 33,569,787 | 213,910 | 6.3 |
| Italy | 29,899,785 | 324,686 | 10.8 |
| Great Britain | 37,888,439 | 258,348 | 6.8 |
| United States | 75,000,000 | 65,000 | .86 |

| | Population. | Army in present war. | Per cent. |
|---|---|---|---|
| Great Britain | 37,888,439 | 503,484 | 13.2 |
| United States | 75,000,000 | 100,000 | 1.33 |

NOTE.—The population of the United States in 1890 was 62,622,250. For the purpose of the tables it is estimated at 75,000,000. The permissible Regular Army until July 1, 1901, is 65,000; actually now 68,010. The permissible Volunteer Army is 35,000; actually now 31,856, to be reduced under existing law to 27,451 regulars, and the entire volunteer force to be discharged.

TABLE No. 2.—*Proportion of soldiers to area.*

| | Area in square miles. | Army in peace. | Soldiers to each square mile. | Square miles to each soldier. |
|---|---|---|---|---|
| France | 204,177 | 540,405 | 2.6 | 0.37 |
| Germany | 211,108 | 587,933 | 2.7 | .35 |
| Austria-Hungary | 201,591 | 352,429 | 1.2 | .57 |
| Russia | 8,660,395 | 896,000 | .103 | 9.6 |
| Turkey | 1,652,543 | 213,910 | .12 | 7.7 |
| Italy | 110,465 | 324,686 | 2.9 | .34 |
| Great Britain | 120,973 | 258,348 | 2.1 | .46 |
| United States | 3,602,884 | 65,000 | .018 | 55.4 |

| | Area in square miles. | Army in present war. | Soldiers to each square mile. | Square miles to each soldier. |
|---|---|---|---|---|
| Great Britain | 120,973 | 503,484 | 4.1 | 0.24 |
| United States | 3,602,884 | 100,000 | .028 | 36 |

TABLE No. 3.—*War budget in peace.*

| | Population. | War budget. | Year of budget. | Amount per capita. |
|---|---|---|---|---|
| France | 38,517,905 | $123,517,681 | 1898 | 3.20 |
| Germany | 52,270,901 | 141,175,350 | 1898 | 2.70 |
| Austria-Hungary | 41,827,500 | 86,083,024 | 1897 | 2.05 |
| Russia | 128,902,173 | 148,640,191 | 1898 | 1.15 |
| Turkey | 33,569,787 | 19,921,755 | 1897 | .59 |
| Italy | 29,899,785 | 45,659,609 | 1898 | 1.52 |
| Great Britain | 37,888,439 | 88,152,750 | 1897 | 2.32 |
| United States | 75,000,000 | 51,093,927 | 1896 | .68 |

Taking the armies of Europe at a period in 1899 when all European nations were at peace, and it will be seen that France, with 540,000 men, had 14 soldiers to each 1,000 of people, and 2.6 soldiers to each square mile; Germany, 590,000 soldiers, being 14.3 to each 1,000 and 3.7 to each square mile; Russia, 896,000, being 6.9 to every 1,000, and, on account of her enormous area (including Siberia), 9.6 square miles to each soldier; Great Britain, 258,000, being 6.8 to the 1,000 and 2.1 to each square mile.

Now let us compare the United States under existing conditions, all of the countries named being on a peace basis and the Republic at war. Our population in 1890 was 62,000,000. I estimate it now at 75,000,000, a conservative estimate. The Regular Army is, under existing law, 65,000, which is eighty-six one-hundredths of a soldier to each 1,000 of people. Adding the volunteer force now in the field and we have 1.33 soldiers to each 1,000, as compared with 9.7, which is the average of all European nations, and 13.2, which is the proportion in Great Britain at the present. And yet this absurdly small fraction of an armed man is declared by the cowardly cavilers and deceiving demagogues to be a threat at the liberty of the people. In France there are 2.6 and in Germany 2.7 soldiers to each square mile of territory, while in the United States there is one regular to each 55 square miles of American soil, and when the volunteers are added, one man to each 36 square miles. Truly this solitary soldier would have an active time of it lording it over such a broad domain. He would be ever on duty, and to accomplish anything his reveille would have to continue until after the bed taps, and taps never be sounded.

The following table, showing approximately similar conditions with respect to the organized militia of the various States and Territories, except that of Alaska and Indian Territory which have none, has been prepared in this office. The population is that reported in 1890, as the census for 1900 has not yet been published; and the organized militia force is taken from the latest abstracts received and published by the Adjutant-General's Office just previous to the Spanish war:

TABLE No. 4.—*Proportion of soldiers to population of States.*

| States, etc. | Population, 1890. | Area in square miles. | Organized militia, 1896. | Soldiers per 1,000 of population. | Soldiers to each square mile. |
|---|---|---|---|---|---|
| Alabama | 1,513,017 | 52,250 | 2,453 | 1.6 | 0.05 |
| Arizona | 59,620 | 113,020 | 478 | 8 | .004 |
| Arkansas | 1,128,179 | 53,850 | 1,019 | .9 | .02 |
| California | 1,208,130 | 158,360 | 3,770 | 3.1 | .02 |
| Colorado | 419,198 | 103,925 | 1,802 | 4.3 | .02 |
| Connecticut | 746,258 | 4,990 | 2,624 | 3.5 | .53 |
| Delaware | 168,493 | 2,050 | 457 | 2.7 | .22 |
| District of Columbia | 230,392 | 70 | 1,358 | 5.9 | 19.4 |
| Florida | 391,422 | 58,680 | 1,198 | 3.1 | .02 |
| Georgia | 1,837,353 | 59,475 | 4,588 | 2.5 | .08 |
| Idaho | 84,385 | 84,800 | 613 | 7.3 | .007 |
| Illinois | 3,826,351 | 56,650 | 6,743 | 1.8 | .12 |
| Indiana | 2,192,404 | 36,350 | 2,940 | 1.3 | .08 |
| Iowa | 1,911,896 | 56,025 | 2,516 | 1.3 | .04 |
| Kansas | 1,427,096 | 82,080 | 1,656 | 1.2 | .02 |
| Kentucky | 1,858,635 | 40,400 | 1,667 | .9 | .04 |
| Louisiana | 1,118,587 | 48,720 | 2,129 | 1.9 | .04 |
| Maine | 661,086 | 33,040 | 1,356 | 2.1 | .04 |
| Maryland | 1,042,390 | 12,210 | 1,859 | 1.8 | .15 |
| Massachusetts | 2,238,943 | 8,315 | 5,047 | 2.3 | .61 |
| Michigan | 2,093,889 | 58,915 | 2,864 | 1.3 | .05 |
| Minnesota | 1,301,826 | 83,365 | 2,009 | 1.5 | .02 |
| Mississippi | 1,289,600 | 46,810 | 1,817 | 1.4 | .04 |
| Missouri | 2,679,184 | 69,415 | 2,349 | .9 | .03 |
| Montana | 132,159 | 146,080 | 459 | 3.5 | .003 |
| Nebraska | 1,058,910 | 77,510 | 1,333 | 1.3 | .02 |
| Nevada | 45,761 | 110,700 | 371 | 8.1 | .003 |
| New Hampshire | 376,530 | 9,305 | 1,368 | 3.6 | .15 |
| New Jersey | 1,444,933 | 7,815 | 4,188 | 2.9 | .54 |
| New Mexico | 153,593 | 122,580 | 433 | 2.8 | .004 |
| New York | 5,997,853 | 49,170 | 13,406 | 2.2 | .27 |
| North Carolina | 1,617,947 | 52,250 | 1,510 | .9 | .03 |
| North Dakota | 182,719 | 70,795 | 528 | 2.8 | .007 |
| Ohio | 3,672,316 | 41,060 | 5,988 | 1.6 | .15 |
| Oklahoma | 61,834 | 39,030 | 613 | 9.9 | .02 |
| Oregon | 313,767 | 96,030 | 1,504 | 4.8 | .02 |
| Pennsylvania | 5,258,014 | 45,215 | 8,669 | 1.6 | .19 |
| Rhode Island | 345,506 | 1,250 | 1,347 | 3.9 | 1.08 |
| South Carolina | 1,151,149 | 30,750 | 3,734 | 3.2 | .12 |
| South Dakota | 328,808 | 77,650 | 806 | 2.5 | .01 |
| Tennessee | 1,767,518 | 42,050 | 1,821 | 1 | .04 |
| Texas | 2,235,523 | 265,780 | 2,643 | 1.2 | .01 |
| Utah | 207,905 | 84,970 | 938 | 4.5 | .01 |
| Vermont | 332,422 | 9,565 | 728 | 2.2 | .08 |
| Virginia | 1,655,980 | 42,450 | 3,137 | 1.9 | .07 |
| Washington | 349,390 | 69,180 | 864 | 2.5 | .01 |
| West Virginia | 762,794 | 24,780 | 881 | 1.2 | .04 |
| Wisconsin | 1,686,880 | 56,040 | 2,622 | 1.5 | .05 |
| Wyoming | 60,705 | 97,890 | 415 | 6.8 | .004 |

Compared with the United States Army of 65,000 men, every State or Territory has more soldiers per 1,000 of population than the United States, and most of them have more soldiers to each square mile; the range per 1,000 of population being from 0.9 for Arkansas, Kentucky, Missouri, and North Carolina to 9.9 for Oklahoma Territory, and per square mile from 0.003 for Montana and Nevada to 19.4 for the District of Columbia.

### WATER TRANSPORTATION.

The wisdom of a disinterested inspection of our constantly growing transport fleet, by officers of the Inspector-General's Department, has been amply demonstrated during the past year, and it is believed that all should aid toward the perfection of the system and of the method of transportation, which promises to become one of the most important features of the military service. The necessary instructions were issued and the inspections begun under the directions of the Secretary of War, as contained in the telegram from the Adjutant-General's office of September 16, 1899, and letters of March 3, 1900, to the commanding general Department of California, and of October 13, 1899, to the commanding general Department of the East, which were as follows:

[Official telegram.]

WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE,
*Washington, September 16, 1899.*

COMMANDING GENERAL, DEPARTMENT OF CALIFORNIA,
*San Francisco, Cal.:*

Having reference to previous instructions on the subject, the Secretary of War enjoins upon you the importance of careful inspection under your special directions, in addition to that made by officers of the transport service, of all ships, including hospital ships, on which troops are to embark; that you should, in this way, fully satisfy yourself that the best possible service in the way of transportation is being had.

H. C. CORBIN, *Adjutant-General.*

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WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE,
*Washington, March 3, 1900.*

SIR: The Secretary of War has carefully considered the question raised by the inspector-general in his communication of January 19, 1900, together with your remarks thereon in indorsement of January 31, 1900, regarding the inspection of transports leaving San Francisco, and has come to the conclusion that a careful inspection of all transports belonging to or chartered by the Government leaving the port of San Francisco should be made by the inspector-general of your department in addition to the inspections made by the sanitary inspector, the medical inspector, the officers of the transport service as required by transport regulations, and the supervising-inspector of the Treasury Department.

He therefore desires that you give the necessary instructions looking to the carrying out of this procedure.

Very respectfully,

JOHN A. JOHNSTON,
*Assistant Adjutant-General.*

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WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE,
*Washington, October 13, 1899.*

SIR: The Secretary of War directs that you cause all transports belonging to or chartered by the Government leaving the port of New York to be carefully inspected by the inspector-general of your staff. In his absence you will detail another officer of your department as special inspector. This inspection to be in addition to that of the transport service.

Very respectfully,

JOHN A. JOHNSTON,
*Assistant Adjutant-General.*

COMMANDING GENERAL, DEPARTMENT OF THE EAST,
*Governor's Island, New York.*

During the remainder of the fiscal year the inspection of transports by officers of the Inspector-General's Department has proceeded regularly under the instructions issued, and the reports received have been promptly acted on by this Bureau, and it is believed that the results of these inspections have been of marked benefit to the public service; and a somewhat similar practice and instructions to those issued for inspections at the ports of New York and San Francisco may wisely prevail in the insular possessions, so there will be an occasional inspection report showing the condition of the transports during actual service, as also of the transports which do not touch at those American ports. The reports by 12 officers of 70 inspections of 40 transports have been received during the past fiscal year, as shown in Appendix B; and the additional labor has fallen principally upon the New York and San Francisco offices and the insular dependencies, upon whom the greater bulk of the most important work of inspection had already largely devolved during the past fiscal year. How important such inspection duty was upon more than one occasion during previous wars, and the faithful zeal and tactful intelligence with which it has been accomplished now, is doubtless recognized by all who are familiar with the traditions of the corps. None have been daunted by the additional work, and it is believed the public service has been given opportunity to profit by this arduous work well done. Would it not be well to authorize the Quartermaster's Department to construct a pair of model transports to cap its purchased fleet, say twin-screw, fairly fast, strong, commodious, comfortable, safe, and healthful vessels, capable of carrying a battalion comfortably and promptly, with all its stores? The work has been so striking and important that, in view of all that lies before it, the Quartermaster's Department should be given every encouragement and opportunity to demonstrate the perfection of its system by having ships of its own design.

At the beginning of the last fiscal year there were in use on the Atlantic coast, in connection with the army transport service, 9 vessels employed in the transportation of troops and freight and 1 as a hospital ship, and in addition 3 steam lighters, 7 tugs, 6 barges, and 2 sloops, all of which were owned by the Government. At the same time there were in service in the Pacific fleet 1 cable ship, 5 troop ships, and 1 hospital ship, and 3 other vessels were being fitted out for this fleet as troop ships, also owned by the Government. In addition there were on June 30, 1899, 15 chartered vessels in service for duty on the Pacific Ocean.

The first of the transports to be refitted and put in thorough repair for the more comfortable accommodation of the officers and enlisted men carried on them were the *Grant*, *Sherman*, and *Sheridan*, and every effort was made to make them models of their class. These were followed by the refitting of the *Thomas*, *Logan*, *Meade*, *Crook*, and *Sedgwick* as troop ships, and the *Missouri* as a modern hospital ship. The other vessels purchased by the Government are being refitted as they can be spared from the service.

From the reports submitted comparative data indicating in detail the condition of the vessels owned and chartered by the Government for the use of the army transport service is shown in Appendix B.

The following extracts from the reports of Lieut. Col. M. P. Maus, inspector-general, U. S. Volunteers, Department of California, and of

Lieut. Col. R. B. Harrison, inspector-general, U. S. Volunteers, Department of Porto Rico, are submitted:

Lieutenant-Colonel Maus reports:

In making these inspections it has been the custom to have the marine superintendent, supervising engineer, transport quartermaster, and, at times, the master of the ship accompany me. Every part of the ship has been visited, and defects, needed repairs, and improvements noted and called to the attention of the transport officials.

Subsequent inspections have shown in almost every case that there has been promptness in making such repairs wherever practicable.

Ventilation, as a rule, is a difficult matter on ships, and in the more remote parts it is believed that the exhaust and forced-air systems should be combined, especially in the compartments occupied by the firemen and crew, which are low and more or less heated.

Suitability of transports.

It has been observed that the ships of the class of the *Sherman*, *Sheridan*, *Logan*, *Thomas*, and *Grant*, which carry on an average 1,822 officers and men and a large amount of cargo, are the most economical vessels. Such vessels can carry an organization complete, with all its impedimenta. The coal consumption of such vessels is not much more than that of the *Meade*, *Sumner*, and *Warren*, which, on account of their limited carrying capacity for both men and cargo and the large consumption of coal, are proportionately very expensive.

Building transports.

It is believed it would be in the interest of economy, comfort, and efficiency to make specifications for and cause the construction of the required number of transports for our foreign service. Such ships should be built with especial accommodations to carry organizations complete with their wheel and other transportation, animals, camp equipage, etc. Animal transports should especially be constructed with broad beam and bilge keels, in order to give plenty of space for the exercise of animals, to insure steadiness, and to provide at the same time for the other requirements of an animal ship which experience shows to be absolutely necessary for the safe passage of animals and assure their arrival in a serviceable condition, which is a matter as important as the requirements of troop ships.

Purchase and hire of transports.

Laws ought to be enacted by Congress permitting the Government to purchase or charter ships flying the United States flag at rates to be established on some equitable basis, when needed in case of war or other necessity. As the law now stands, the Government is at the mercy of owners of ships, brokers, and others.

Transport quartermasters.

Under the present transport regulations there is liability to conflict of authority between transport quartermasters and the masters of the ships in regard to their duties.

There can be no divided authority, and it is evident that all matters relating to the navigation of the ship, discipline of the crew, lifeboat drill, fire drill, and drill of the crew generally should be left to the master of the ship, who is naturally responsible for its proper navigation and safety. On him the crew depends. His authority in the hour of danger, and at other times, should be unquestioned. Seamen will receive punishment from the master of the ship that they will resent from the transport quartermaster or anyone else aboard the ship. If interfered with and authority divided, the result some day may be disastrous.

Life-preservers.

Racks above the berths for the storage and safe-keeping of life-preservers should be provided on all transports, where they should be required to be kept, not only to insure their serviceability, but to protect Government property.

Steward's department on transports.

Attention is invited to the fact that the steward's department of transports is under the control of the depot and purchasing commissary, while in all other respects the ships are under the control of the superintendent of the transport service, an officer of the quartermaster's department.

Animal transports.

The scuppers should discharge overboard and not into the bilges. When they do discharge into the bilges the refuse must necessarily be pumped out by the bilge pumps. Solid matter is more or less liable to get into the pipes and they are in danger of becoming disabled by being clogged. If the bilges are not well flushed and kept clean, which at times may become difficult to do, bad sanitary conditions arise. This is a most important matter, and wherever possible ships should not be employed where the scuppers do not discharge overboard and are not adequate to pass the refuse.

Animal ships should have a broad beam and bilge keels in order to give stability and at the same time provide suitable space for the animals that they may be taken out and given some exercise and recreation from the restraint of the stall.

Much care has been taken in the inspection of these vessels in ascertaining that the best accommodations under the circumstances have been provided. Reports containing information as to the suitability of stalls, feeding, watering, etc., have been consulted. The proper dimensions and suitability generally of stalls, especially with regard to strength, have been duly considered. With the exception of the *Siam*, where the stalls broke loose in a typhoon and most all of the animals were destroyed, they have generally been strong and well constructed. Quite a number of animals, however, have been lost in transportation from various causes, the exact number of which I have been unable to determine.

The ventilation of animal transports has generally been good. It has consisted of the forced-air system, wind sails, ports, and open hatches. Horses carried on the upper decks have fared especially well in this respect. Those on the lower decks, while they have had less motion from their location, have not been so well supplied, but, as far as known, there have been no serious results.

Electric lights have been installed, and awnings and other protection needed in the more northern routes, especially for protection against rain and cold weather, have been provided. Horses are very liable to contract pneumonia as a result from such exposure, and precautions in this respect are important.

Water has been supplied in large tanks, one of which has been provided for each compartment, and it is believed that, all things considered, the results have been generally satisfactory.

Stalls.

Ships have been fitted out with various kinds of stalls, generally well made, and padded fore and aft. Slings and breast straps have also been supplied for use when necessary. The dimensions and construction of stalls is a most important matter, but as far as known there is no standard fixed by the Department for them. Those placed on ships here have varied in size from 7 feet in length and 29 inches in width to 6 feet 6 inches in length and 27¼ inches in width. Those which have appeared most satisfactory have been placed upon the *Strathgyle* and *Aztec*, the last ships fitted out. The dimensions have been, length 6 feet 6 inches, width 27¼ inches, both measurements in the clear. Two side boards, made of smooth 12-inch lumber, are placed on the sides, which board them up to within 22 inches of the deck. Four cleats have been placed on the floor, inside the stall, and one in front in the alleyway. These stalls have been very strongly made, both sides and front posts being detachable.

The transport regulations have no instructions on this subject. It is suggested that such regulations and instructions be formulated and issued for the guidance of all concerned. This is an important matter, and to date it is left largely to the opinion of individuals, as is shown by the frequent changes in dimensions and other arrangements.

Adjustable stalls.

As animals differ greatly in size, from the heavy battery or draft horse to the light cavalry or saddle horse, and the draft and pack mules, it would seem that in fitting out ships due consideration should be given to this fact.

If properly constructed, stalls can be taken apart and used again when necessary. They should be arranged so as to be suitable for animals of different sizes and also to the requirements of the weather. In rough weather it is well known that animals should be kept as tight as possible to prevent knocking about, while in smooth seas they should be given more freedom. This can only be done with adjustable stalls. Suitable plans for the same could easily be provided, and they would cost but little more than the ordinary stalls.

Feeding and watering.

Paragraph 341 of the transport regulations gives directions as to feeding. The opinions of officers vary as to the suitability of this ration. One officer finds that bran mash should be fed for three or four days after starting out, and then grain, to be varied at times with bran mash. Another officer states that the feeding of straight grain invariably has given his horses colic. It is further stated that after a period of mixed bran and oats diet or bran mash the bowels become too sensitive to receive straight oats, even for a short period. Much seems to depend, however, on how the horses have been treated before going aboard ship. Alfalfa is recommended as especially suitable in the way of hay and has a laxative tendency, while the wheat hay furnished horses at this port was not relished by the animals.

This is a very complicated subject, and regulations, as full as possible, covering the various kinds of food suitable, ought to be prepared, especially for the use of officers who have had limited experience. The safe transport of animals and their arrival in proper condition depends largely upon the diet. Tanks have generally been supplied in each compartment. These should always be provided with faucets from which water can be drawn in buckets. The dipping of buckets into the supply tanks is liable to impair the purity of the water.

It would greatly facilitate watering, and be desirable, to have pipes carried through the compartments, with faucets arranged at suitable points from which the water can be drawn. A full supply of water for the voyage should be carried in tanks, and the condensers not depended upon. A careful inspection as to the cleaning and disinfecting of tanks, however, should be made before filling.

Officers in charge, care takers, etc. It is fully as important, if not more so, to have as experienced an officer in charge of an animal transport as of a troopship. For obvious reasons the animal demands, from its helpless condition, especial care and attention. The great object is to insure arrival in good condition, ready for service.

Animal transportation is very costly, and their value on arrival at times is inestimable.

It would be of interest to the Government to assign especially experienced and able officers in charge of animal transports, and to assign permanently to such ships veterinarians, trained crews, and care takers. Such men ought to be comfortably quartered and well paid. Good men discharged from the mounted service would be especially suitable. These crews would become used to the sea, and the difficulty arising from green men, who become ill often as soon as the vessel leaves the harbor and strikes the least rough weather, would be obviated. In some cases it has been reported that a very large percentage of the care takers have become so ill for extended periods as to render the proper care of animals, cleaning the ship, etc., impossible.

Commendation. I would invite attention to the immense amount of work done at this port by the transport service, and the satisfactory results generally in the transportation of men, animals, and supplies of all kinds. Not a life has been lost through accident. This service has been under the charge of the general superintendent, Maj. Oscar F. Long, whose incessant labor and faithful and intelligent performance of duty are deserving of high consideration.

Lieutenant-Colonel Harrison reports:

The transport service of the island up to last June, when the movement of relief supplies began to be discontinued, was of the highest order. During this period Porto Rico enjoyed a weekly transport service with clean and comfortable accommodations, good meals, and regular days of arrival and departure of transports. During the period from August 10, 1899, to June 30, 1900, the transport service, in addition to transporting the regular supplies for the maintenance of the army in Porto Rico, transported more than 32,000,000 pounds of relief supplies, and in addition to making substantial contribution to the relief and distress of the island established a high-water mark for efficiency, as the great work was performed without the loss of a single life or substantial injury to a single ship other than the damage to a tugboat.

Nothing has contributed so much to the comfort and happiness of men on service in Porto Rico, and made them willing to cheerfully endure such service, as a good transport service. It has brought them in close touch with our home country and its necessities and home comforts, and made it possible for the officers and enlisted men to have their wives and children with them at the minimum of cost. It has brought relief supplies and school furniture without cost, and in thousands of ways has contributed to the advancement, improvement, relief, and education of this island.

Cuba is less than twenty-four hours' travel from the United States and Porto Rico is more than five days'.

If such good results are attainable with second-hand ships, what can be fairly expected of new ones designed especially for this duty?

### LAND TRANSPORTATION.

In former reports the importance of the coming question of mechanical land transportation has been reverted to, and the present situation can be sufficiently summarized in a single extract from the United Service Magazine of September, 1900, viz:

The value of road locomotives as compared with that of horses, mules, or bullocks for army transport work is obvious. So long as fuel is obtainable and the roads are practicable the traction engine can be relied upon to keep up with troops, and thus avert the fatigue and weariness that soldiers feel during the incessant halts to permit the convoy to close up. Moreover, traction engines can always do work up to the limits of their natural strength, whereas draft animals deteriorate rapidly under hard work. The engines, it is true, break down occasionally, but it very rarely happens that the mischief extends beyond what the engineers can speedily repair on the spot. In short, while the steam horse can generally be set on his legs again without much difficulty, the actual horse or mule that drops in his tracks can not be resuscitated unless by a miracle. * * *

At the close of the present operations in South Africa the military authorities will doubtless issue a report upon the use of traction engines during the campaign.

The Signal Corps has secured the first motor vehicles for the Army yet reported. It may be well to remember that "your carriages were heavy laden; they are a burden to the weary beast."

## DISBURSEMENTS.

A tabulated summary of the money inspected for the current decade is indicated in Appendix E, Tables A and B, the total covered by the ten years' inspection showing $1,183,729,647.32 involved in money accounts, or an average of $118,372,964.73 per annum; the largest being in 1899, involving over $350,000,000, and the smallest in 1891, being less than $63,000,000. Is this not some indication of the growth in the work of this Department which should be most carefully provided for?

During the latter half of the fiscal year 1898 very few inspections were made on account of the officers being in the field in the war with Spain, and the inspections for 1899 included those that were omitted in 1898, so the amount involved for 1899 was necessarily unusually large. During the fiscal year ending June 30, 1900, there were made 1,406 inspections of the accounts of disbursing officers, the amount involved, including transfers, being $287,700,522.05, as against $350,855,522.73 for the fiscal year 1899, a decrease of $63,155,000.68. If it is clearly decided how many of such inspections should be made during the year by one officer, some of them taking days to make and involving thousands of checks to verify and millions of money disbursed, the proper number of officers for the corps can be approximately determined, and it will surely be more than are now authorized. And each of them can accomplish more and better work when given an efficient clerk to help him see and do things, especially about money matters, which must need all-seeing eyes. If $10,000,000 each or fifty such inspections would be a fair stint of work in addition to other duties, evidently about thirty officers can be well employed at it.

The total amount involved in the inspections for the fiscal year 1900 is much larger than those heretofore made that pertain to the transactions of any one fiscal year, and they may be summarized as follows:

| | | |
|---|---|---|
| Balances taken up | | $22,140,624.25 |
| Receipts from Treasury | $145,561,447.47 | |
| Receipts from other sources | 9,100,570.29 | |
| | | 155,662,017.76 |
| Transfers from other officers | | 109,897,880.04 |
| Total to be accounted for | | 287,700,522.05 |
| Disbursements | $150,372,936.51 | |
| Deposited to credit Treasurer United States | 13,678,631.99 | |
| | 164,051,568.50 | |
| Transferred to other officers | 102,863,086.35 | |
| | | 266,914,654.85 |
| Balance | | 20,785,867.20 |
| Discrepancy in account of acting assistant quartermaster, St. Francis Barracks | | 18.34 |
| Discrepancy in account of assistant commissary of subsistence, Fort Wingate | | 3.36 |
| | | 20,785,888.90 |
| Balance distributed as follows: | | |
| United States Treasury | | 16,376,887.85 |
| United States depositories | | 2,644,288.22 |
| Cash on hand | | 1,763,001.83 |
| Unaccounted for at Marion Branch National Home for Disabled Volunteer Soldiers | | 1,711.00 |

It is submitted that these figures are not insignificant, nor the duty they indicate unimportant. The mere physical labor involved in making four such inspections every day in the year, covering a daily average of $750,000, deserves recognition and adequate provision. The difficulties and disadvantages under which this important duty has labored, especially for lack of sufficient and skillful clerical assistants, it is hoped may yet be removed or alleviated. With three times the disbursements to inspect, is it not well to provide the specially good service its importance suggests? Officers may be borrowed for a certain period, but who will lend a clerk for more than a day contentedly?

Of the $1,763,001.83 reported as cash on hand the sum of $43,000 was in bonds held by the several Branches of the National Home for Disabled Volunteer Soldiers, which also held the sum of $5,178.84 actual cash or checks on hand; and the treasurer of the United States Soldiers' Home had $119.91 cash on hand, leaving the sum of $1,714,703.18 cash in the hands of disbursing officers of the Army at the close of the fiscal year, as against $1,523,557.08 for the preceding year and $14,604.16 in 1897. The amount for 1900 is about 0.012 per cent of the entire year's disbursements by them and 161 per cent of the monthly disbursements, as against 118 in 1897. The extreme and average in the hands of army disbursing officers who held cash on hand were, respectively, $1,013,129.66 and $5,460.83, and the similar figures for 1897 were $3,830.37 and $35.32. The extreme and average of those who had funds in national-bank depositories were, respectively, $143,048.46 and $17,078.82, including post commissaries and quartermasters; and the highest amount at date of last inspection to the credit of any disbursing officer of the Army was $1,919,464.96 (as against $204,653.88 in 1897) and of the Soldiers' Homes, $464,435.94. The question of excessive balances has already received your attention, and remedial action has been applied.

The above statement shows a decrease of $63,155,000.63 from the amount involved in the accounts inspected during the fiscal year 1899, and the following tabulation shows where the decrease occurred:

| | | |
|---|---|---|
| Decreased amounts: | | |
| Quartermaster-General's Department | | $12,405,662.76 |
| Pay Department | | 62,276,507.71 |
| Engineer Department | | 1,099,130.17 |
| Ordnance Department | | 9,974,303.53 |
| Miscellaneous | | 4,983.59 |
| Total | | 85,760,587.76 |
| Increased amounts: | | |
| Subsistence Department | $5,480,441.14 | |
| National Homes for Disabled Volunteer Soldiers | 1,300,957,58 | |
| Transport service | 15,151,171.85 | |
| Medical Department | 652,025.17 | |
| Recruiting officers | 20,419.29 | |
| Adjutant-General's Department | 572.05 | |
| | | 22,605,587.08 |
| Net decrease | | 63,155,000.68 |

The Army disbursements from the Treasury for the past four fiscal years may be designated in groups, as follows:

| Disbursements. | 1897. | 1898. | 1899. | 1900. |
|---|---|---|---|---|
| Army | $29,873,506.27 | $22,283,505.40 | $151,672,186.79 | $117,998,589.75 |
| River and harbor | 14,357,562.56 | 15,479,935.46 | 25,842,266.93 | 24,769,168.63 |
| Other civil | 5,345,969.08 | 6,764,163.56 | 6,982,941.15 | 7,610,228.13 |
| Total | 49,577,037.91 | 44,527,604.42 | 184,497,394.87 | 150,372,986.51 |

During the past eight fiscal years the relation between the total amount involved and the disbursements, transfers, deposits in the Treasury, and balances on hand appear as follows:

| Designation. | 1893. | 1894. | 1895. | 1896. | 1897. | 1898. | 1899. | 1900. |
|---|---|---|---|---|---|---|---|---|
| Disbursements | 0.727 | 0.760 | 0.756 | 0.710 | 0.706 | 0.712 | 0.527 | 0.523 |
| Transfers between officers | .191 | .163 | .158 | .207 | .197 | .184 | .372 | .355 |
| Redeposited in Treasury | .025 | .015 | .018 | .013 | .018 | .017 | .031 | .048 |
| Balances on hand | .057 | .062 | .062 | .070 | .079 | .087 | .070 | .074 |

The doubling since 1894 of the percentage of mere transfers back and forth between officers, especially in the last two years, may not indicate waste work.

The average monthly disbursements of officers of the Army whose accounts were inspected during the year was $11,896,892.36, and their final balances represented 161 per cent of this average, as against 158 in 1899, 173 in 1898, 118 in 1897, 125 in 1896, 107 in 1895, and 88 in 1894. This gradual increase until the maximum about doubled the minimum has received your attention and is being corrected. Perhaps a similar statement of the annual per capita expense of a soldier in the several departments and under the several items would be equally instructive.

The subjoined tabulation shows the variation in these percentages in the principal disbursing departments during ten fiscal years, as follows:

| Department. | 1891. | 1892. | 1893. | 1894. | 1895. | 1896. | 1897. | 1898. | 1899. | 1900. |
|---|---|---|---|---|---|---|---|---|---|---|
| Engineer | 293 | 104 | 82 | 75 | 83 | 116 | 133 | 160 | 148 | 158 |
| Ordnance | 191 | 124 | 105 | 115 | 139 | 113 | 130 | 86 | 123 | 174 |
| Quartermaster | 130 | 53 | 120 | 135 | 179 | 170 | 161 | 256 | 186 | 245 |
| Subsistence | 102 | 99 | 39 | 73 | 119 | 89 | 109 | 133 | 146 | 68 |
| Medical | 82 | 102 | 186 | 83 | 131 | 205 | 71 | 313 | 126 | 171 |
| Pay | 57 | 48 | 90 | 66 | 83 | 77 | 101 | 108 | 142 | 142 |
| Total | —— | 99 | 94 | 88 | 107 | 125 | 118 | 173 | 158 | 161 |

As these are percentages, the difference in the strain during the several years and in the methods of the several bureaus may be partially indicated, and it is probable that the Government work was equally well done during those years that the balances were not excessive.

The total number of inspections made during the fiscal year 1900, including statements made under Army Regulations 877, verified by the inspector, was 1,406.

The following table shows the number of these inspections for four fiscal years, which the law requires shall be made frequently, to wit:

| Accounts. | 1897. | | 1898. | | 1899. | | 1900. | |
|---|---|---|---|---|---|---|---|---|
| | Officers. | Inspections. | Officers. | Inspections. | Officers. | Inspections. | Officers. | Inspections. |
| General staff officers | 216 | 558 | 205 | 362 | 324 | 497 | 301 | 666 |
| Post staff officers | 176 | 352 | 186 | 305 | 217 | 391 | 316 | 554 |
| Other line officers | 18 | 23 | 28 | 35 | 36 | 46 | 109 | 175 |
| Soldiers' Home | 10 | 10 | 11 | 11 | 10 | 12 | 11 | 11 |
| Total | 420 | 943 | 430 | 713 | 587 | 946 | 737 | 1,406 |
| Average each staff officer | ........ | 2.5 | ........ | 1.7 | ........ | 1.5 | ........ | 2.2 |
| Average each post officer | ........ | 2.0 | ........ | 1.6 | ........ | 1.8 | ........ | 1.7 |

Of the 1,406 inspections, involving $287,700,522.05, it appears from the following tabulation that 1,153 inspections (including 385 inspections of post officers), involving $273,958,945.25, were made by officers of this department, and 7 inspections (of which 3 were of post officers), involving $129,295.96, were made by other officers, to wit:

| Department. | Inspected. | | |
|---|---|---|---|
| | Officers. | Inspections. | Amount involved. |
| Adjutant-General | 16 | 24 | $4,770.55 |
| Quartermaster-General: | | | |
| Staff | 72 | 133 | 69,611,202.21 |
| Post | 159 | 270 | 2,286,937.90 |
| Subsistence: | | | |
| Staff | 42 | 180 | 21,264,460.68 |
| Post | 157 | 284 | 1,406,771.27 |
| Medical | 13 | 20 | 3,415,425.45 |
| Pay | 53 | 98 | 118,109,569.36 |
| Engineer | 71 | 154 | 30,167,832.16 |
| Ordnance | 34 | 57 | 13,219,666.78 |
| Recruiting officers | 67 | 93 | 195,525.46 |
| National Home for Disabled Volunteer Soldiers | 10 | 10 | 11,547,080.20 |
| Transport service | 31 | 65 | 15,151,171.85 |
| Miscellaneous | 12 | 18 | 1,320,108.18 |
| Total | 737 | 1,406 | 287,700,522.05 |

| Department. | Inspected. | | | | | |
|---|---|---|---|---|---|---|
| | By officers of the Inspector-General's Department. | | By other officers. | | Under par. 877, Army Regulations. | |
| | No. | Amount. | No. | Amount. | No. | Amount. |
| Adjutant-General | 23 | $4,733.83 | .... | ............ | 1 | $36.72 |
| Quartermaster-General: | | | | | | |
| Staff | 118 | 62,566,984.68 | .... | ............ | 15 | 7,044,217.53 |
| Post | 182 | 1,646,113.98 | 2 | $32,772.86 | 86 | 608,051.06 |
| Subsistence: | | | | | | |
| Staff | 171 | 18,892,821.38 | .... | ............ | 9 | 2,371,639.30 |
| Post | 208 | 905,197.78 | 1 | 1,089.17 | 80 | 500,484.32 |
| Medical | 20 | 3,415,425.45 | .... | ............ | .... | ............ |
| Pay | 94 | 116,623,809.91 | .... | ............ | 4 | 1,485,759.45 |
| Engineer | 144 | 28,763,748.78 | .... | ............ | 10 | 1,404,083.38 |
| Ordnance | 50 | 13,087,172.34 | .... | ............ | 7 | 132,494.44 |
| Recruiting officers | 57 | 126,728.36 | 1 | 282.50 | 35 | 68,514.60 |
| National Home for Disabled Volunteer Soldiers | 10 | 11,547,080.20 | .... | ............ | .... | ............ |
| Transport service | 63 | 15,060,020.42 | 2 | 91,151.43 | .... | ............ |
| Miscellaneous | 17 | 1,316,108.18 | 1 | 4,000.00 | .... | ............ |
| Total | 1,152 | 273,955,945.29 | 7 | 129,295.96 | 247 | 13,615,280.80 |
| Per cent of total | ...... | .952 | .... | .0004 | .... | .0476 |

Cuban insular funds.

The following statement shows a summary of the inspections of insular funds made by officers of this Department during the past fiscal year:

| | | |
|---|---|---|
| Balance taken up | | $127,629.36 |
| Received from Insular Treasury | | 28,936,245.35 |
| Received from other officers | | 11,754,012.56 |
| Received from sales | | 6,527.68 |
| Received from customs | | 832,596.43 |
| Received from other sources | | 135,156.25 |
| Total receipts | | 41,792,167.63 |
| Disbursements | $11,999,731.55 | |
| Transferred to officers | 23,940,314.58 | |
| Deposited to credit of Insular Treasurer | 1,962,110.61 | |
| | | 37,902,156.74 |
| Balance to be accounted for | | 3,890,010.89 |

Distribution of balance:

| | | |
|---|---|---|
| North American Trust Co | | $2,593,860.79 |
| Cash on hand | | 1,296,110.19 |
| Amount of short deposits | $40.60 | |
| Amount of over deposits | .69 | |
| | | 39.91 |
| | | 3,890,010.89 |

### INSPECTIONS UNDER ARMY REGULATIONS, 867 AND 868.[1]

The reports indicate that the quartermaster, subsistence, and medical supply depots, hospitals, armories, arsenals, military prisons and prisoners, etc., both in the United States and our insular possessions, have been very efficiently managed and are generally in a very satisfactory condition.

A detailed statement, giving much valuable and interesting information relative to all inspections under Army Regulations, 867 and 868,[1] may be found in Appendix A.

It may be noted that the present edition of the Army Regulations was framed to apply to what may be called the district system of general inspection, which had been adopted as the most economical and efficient form, but possibly not the most popular. In 1898 the geographical department method was adopted, but the order (G. O. 143 of 1899) announcing the general regulations appropriate to this system is not to be issued. So the work of the Department is occasionally questioned. For instance, paragraph 955 of the Army Regulations of 1889, as amended by General Orders, No. 38, 1890, and paragraph 868 of 1895, and General Orders, No. 109 of 1898,[2] seem fairly clear when duty is assigned by the Secretary of War to officers of this Department, but these instructions have occasionally been questioned and the duty delayed. To be most efficient, inspection work and results must be prompt, and a table showing where and how reports are delayed by circumlocution is presented in the annual report to the Lieutenant-General Commanding as relating more particularly to matters concerning the military discipline and instruction of the Army under General Orders, 28, of 1876.[1]

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[1] A. R. 867: Officers of the Inspector-General's Department will inspect once in each year all military commands, garrisoned posts and camps, and once in two years such ungarrisoned posts and national cemeteries as can be visited without departing materially from the routes of other prescribed inspections.

A. R. 868: All depots, armories, arsenals, and public works of every kind under charge of officers of the Army, except works of engineering conducted under the direction of the Secretary of War and supervision of the Chief of Engineers, will be inspected annually by officers of the Inspector-General's Department. These inspections will include military and business administration and methods, but will not extend to the scientific or technical character of work, for which the officer in charge is responsible, through the head of his department, to the Secretary of War.

[2] A. R., 955, of 1889 as amended by G. O., 38, 1890: In addition to the inspections provided for in paragraphs 954, 966, and 967, the Military Academy, the Schools of Application, all depots, rendezvous, armories, arsenals, fortifications, and public works of every kind under charge of, or carried on by, officers of the Army will be inspected at least once each year by officers of the Inspector-General's Department, under instructions from the Secretary of War. These inspections will be restricted to administrative and business methods, and will not extend to nor include the scientific or technical character of the work for which the officer in charge is professionally responsible, through the head of his department, to the Secretary of War. Reports of these inspections will be forwarded direct to the Inspector-General of the Army.

G. O., 109, of 1898: To provide for the inspections required by paragraphs 868, 870, and 871 of the Army Regulations, the Inspector-General of the Army will keep the inspectors-general of the military geographical departments informed, through the department commanders, of the inspections under these paragraphs and such other inspections which the Secretary of War desires shall be made by them; and that each of these inspectors will, at the proper time, submit for the consideration of his immediate commander a plan for making the inspections so desired in the most advantageous and economical manner in connection with the other inspections they may be required to make. If the plan be approved, the department commander will then give such orders as may be required for the necessary travel.

### NATIONAL HOME FOR DISABLED VOLUNTEER SOLDIERS.

During the past fiscal year Gen. William B. Franklin resigned the presidency of the board of managers of the Home, after having performed the arduous and exacting duties of that responsible position with great efficiency and zeal for many years. Under his administration the Home grew, prospered, and improved in many ways. He was succeeded as president of the board of managers by Gen. William J. Sewell, whose long experience as an active member of the board peculiarly fitted him for the position; but his many other duties, both public and private, were so pressing that he was impelled to resign the presidency of the board after serving in that capacity for only a few months. Gen. Martin T. McMahon, who was chosen president of the board in his stead, has also had a long service as an active member of the board of managers and brings to the performance of his new duties the ripe results of an extended experience, as well as high efficiency.

The Home in all its branches has been inspected by officers of this department since 1893 with an earnestness and thoroughness which has produced most satisfactory results. Any further inspections would doubtless only contribute to retaining the present excellent conditions existing; and it may be advisable to discontinue further work of this department in view of our very limited personnel and the large additional duties placed upon us incident to the Spanish war, if it is thought best to curtail our duties in any manner, rather than to provide adequate force to perform them thoroughly. Hampered or perfunctory inspections are possibly worse than none.

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[1] G. O., No. 28, of 1876. The following orders of the President of the United States are hereby promulgated for the information and guidance of all concerned:

The Headquarters of the Army are hereby reestablished at Washington City, and all orders and instructions relative to military operations, or affecting the military control and discipline of the Army, issued by the President through the Secretary of War, shall be promulgated through the General of the Army, and the Departments of the Adjutant-General and the Inspector-General shall report to him and be under his control in all matters relating thereto.

A. R. 767. Chiefs of bureaus of the War Department are authorized to correspond directly with the Secretary of War and with the subordinate officers of their respective corps upon any matter relating exclusively to the duties of the bureau required by statute to be performed under the direction of the Secretary of War, and necessary subreferences of such correspondence and subreports will, in like manner, be direct through officers of the respective corps. Such correspondence with subordinate officers will not embody instructions to be carried out by an officer reporting to or serving under an officer commanding troops in relation to any matter not specifically excepted from his command and control by law or by the Secretary of War, and replies thereto will not embody remarks or recommendations on matters pertaining to the administration of the officer commanding.

A. R. 859, as amended by G. O. 11, 1898. Inspectors-general and acting inspectors-general will report by letter, on arriving at their stations, to the inspector-general at the War Department; they will furnish him copies of all orders and written instructions received for tours of inspection, with a report of the dates of departure from and return to their posts in obedience thereto; and thereafter, on the last day of each month, will report direct to him their addresses and the duties they have performed during the month. Correspondence in the Inspector-General's Department between the head thereof and officers serving therein will be direct, for the purpose of instruction and information with respect to the discharge of their duties; not, however, extending to matters of administration pertaining to military commanders.

The annual inspection of the various Branches of the Home for the fiscal year 1901 is now in progress under Major Knox, inspector-general, assisted by Mr. D. C. Spencer during Mr. Kent's absence in the Antilles; and that for 1900 was also made by the same officer, assisted by Mr. William T. Kent, accountant of the Inspector-General's Department. And the tours, with some interruption, lasted from September 3 to December 8, 1899, a period of about three months, and from July 20 to November 14, 1900, a period of about four months. A slight shortage at the Marion Branch last year and at the Dayton Branch this year was immediately made good. At these inspections it was reported that the various Branch Homes were generally found in excellent condition, the grounds and buildings thoroughly policed and clean, and excellent discipline maintained. As usual, however, a very crowded or congested condition was found at some of the Homes. And this was especially the case at the Eastern Branch, where it is hoped the new barracks will afford some much-needed relief. It was also reported that the administration of the Home affairs was in the hands of an exceptionally capable, efficient, and intelligent body of officers, from highest to lowest; which, of course, guarantees an excellent condition and very satisfactory results generally.

The following legislation by Congress, in the act making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1901, was approved May 26, 1900, to wit:

> Hereafter the following persons only shall be entitled to the benefits of the National Home for Disabled Volunteer Soldiers, and may be admitted thereto upon the order of a member of the board of managers, namely: All honorably discharged officers, soldiers, and sailors who served in the regular or volunteer forces of the United States in any war in which the country has been engaged, who are disabled by disease, wounds, or otherwise, and who have no adequate means of support, and by reason of such disability are incapable of earning their living.

This legislation extends equal benefits and rewards to all its defenders and may intensify the crowded condition that already exists at most of the Branch Homes. It has been estimated that the maximum membership of the Home will be reached probably about the year 1908. But as it may now be expected that soldiers of the war with Spain, as well as those who have served under the most trying climatic conditions in the campaigns in the Philippines, will soon be asking admission, it is more than probable that the period of maximum membership will be deferred for some years after 1908. This probability renders it all the more important that some just and liberal system of outdoor relief be established practically and carried out at least within the limits of current appropriations, as is already authorized by section 4833[1] of the Revised Statutes. It has already been pointed out, in a previous report, that the amount of money turned into the surplus fund for five years from the appropriations for the National Home for Disabled Volunteer Soldiers would have supported an average of more than 2,000 men a year, on an outdoor relief allotment of $8 per month, or $96 a year—thus during that period thoroughly relieving the congested condition at the Branches. Such an arrangement would be beneficial alike to the Government and to the worthy veterans, many of whom would gladly welcome it. Such a plan would not be an experiment, for similar methods have been thoroughly tested at the Regular Home, and at some of the State Homes; where they have worked to the satisfaction of all concerned.

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[1] SEC. 4833. The managers of the National Home for Disabled Volunteers are authorized to aid persons who are entitled to its benefits by outdoor relief in such manner and to such extent as they may deem proper; but such relief shall not exceed the average cost of maintaining an inmate of the Home.

During the past fiscal year the accounts of the Home have, without exception, been promptly received, and always in good condition. That they receive close scrutiny in the general treasurer's office, as well as at the Branch Homes, is shown by the fact that the defects and irregularities found in them are but few indeed and seem to be constantly decreasing in number; and even those noted, few as they are, are rarely of a serious character.

The appropriations for the Home, for all purposes, for the fiscal year ending June 30, 1900, amounted to $2,760,044, exclusive of $550,000 for the further construction of the new Branch at Danville, Ill. The similar appropriations for the preceding fiscal year were $2,649,521. Of the appropriations for the fiscal year 1900 the sum of $120,600 was for special constructions at the several Branches (other than Danville), leaving the sum of $2,639,444 for the maintenance of the members at all the Branches, as against $2,523,996 for the preceding year, an increase of $115,448.

The population of the Homes during the fiscal year, as shown by the trimonthly reports, ranged from 17,869 on July 10, 1899, to 20,357 on February 28, 1900, and the average population for the entire year was 19,238, an increase of 403 over the average for the preceding year, and of 668 over the average for the fiscal year 1897 and of 3,637 over the average for the fiscal year 1894, the first covered by this general inspection. The population of the new Branch at Danville, Ill., was 251 on July 10, 1899, and 1,127 on June 30, 1900, an increase of 876 members during the year. The average membership present at this Branch during the year was 873. As many of these members were transferred from the seven older Branches, the combined average annual membership of the latter was reduced by 470; but even this falling off left some of them still overcrowded.

The total population present and absent at all the Branches during the year ranged from 21,901 on July 30, 1899, to 25,540 on June 30, 1900, and the average was 24,897, so the difference between the average membership present and absent and the average membership actually present was 5,659. Some of them may keep their names quite unnecessarily on the rolls for years, simply as a matter of sentiment or to maintain their rights against a rainy day or against later applicants. It would be a very serious question as to how to dispose of and care for these absentees if they should all return within a year or two to the various Branches to which they belong. In such a contingency it seems that a liberal system of outdoor relief would be the only way out of the difficulty, and it might be a very good plan to take time by the forelock by preparing for a possible contingency before it arises.

Since 1894 the variations of the annual cost of maintenance per capita have been as follows:

| Year. | Population. | Expense per capita. |
|---|---|---|
| 1894 | 15,601 | $141.41 |
| 1895 | 16,480 | 128.78 |
| 1896 | 17,451 | 126.08 |
| 1897 | 18,178 | 121.51 |
| 1898 | 18,570 | 125.99 |
| 1899 | 18,855 | 128.48 |
| 1900 | 19,238 | ........ |

During the fiscal year 1900 there was received from the effects of deceased members (posthumous fund) the sum of $41,468.82, and disbursed on the same account the sum of $20,715.88, leaving a balance of $20,752.94 to be carried to the appropriation for "current expenses," as follows:

| Branch. | Amount received. | Amount disbursed. | Balance to current expenses. |
|---|---|---|---|
| Central | $15,397.40 | $5,287.60 | $10,109.80 |
| Northwestern | 5,510.05 | 4,661.49 | 848.56 |
| Eastern | 3,789.11 | 2,490.63 | 1,298.48 |
| Southern | 6,518.45 | 2,532.95 | 3,985.50 |
| Western | 2,610.97 | 2,112.49 | 498.48 |
| Pacific | 3,894.10 | 1,150.53 | 2,743.57 |
| Marion | 3,350.25 | 2,254.08 | 1,096.17 |
| Danville | 398.49 | 226.11 | 172.38 |
| Total | 41,468.82 | 20,715.88 | 20,752.90 |

The act of August 18, 1894, requires the transfer of posthumous funds to the appropriation for current expenses; and under the operation of that law the following transfers have been made for the fiscal years named:

| Year. | Received. | Disbursed on posthumous account. | Balance to current expenses. | Covered into Treasury. |
|---|---|---|---|---|
| 1894 | [1]$152,232.63 | | [2]$123,058.74 | $29,173.89 |
| 1895 | 46,954.98 | $22,143.56 | 24,811.42 | 24,811.42 |
| 1896 | 43,674.74 | 22,841.63 | 20,833.11 | 20,833.11 |
| 1897 | 49,451.15 | 25,466.47 | 23,984.68 | 23,984.68 |
| 1898 | 43,623.05 | 30,153.12 | 13,469.93 | 13,469.93 |
| 1899 | 51,076.01 | 29,115.43 | 21,960.58 | 21,960.58 |
| 1900 | 41,468.82 | 20,715.88 | 20,752.94 | 20,752.94 |
| Total | 428,481.38 | 150,436.09 | 248,871.40 | 154,986.55 |

[1] $29,173.89 of this was covered into Treasury.

[2] 1895.

The subjoined tabulation shows the amount appropriated for maintenance of members and for special constructions for the fiscal years involved, viz:

| Year. | Average membership. | Appropriation. | For special construction. | For maintenance. |
|---|---|---|---|---|
| 1893 | 14,661 | $2,618,215.49 | $207,540.00 | $2,410,675.49 |
| 1894 | 15,601 | 2,379,872.99 | 1,309.10 | 2,378,563.89 |
| 1895 | 16,480 | 2,324,473.00 | 94,100.00 | [1]2,230,373.00 |
| 1896 | 17,451 | 2,514,846.00 | 173,500.00 | 2,341,346.00 |
| 1897 | 18,178 | 2,492,183.16 | 161,814.75 | 2,330,368.41 |
| 1898 | 18,570 | 3,424,975.00 | [2]1,091,464.00 | 2,333,511.00 |
| 1899 | 18,335 | 2,652,644.50 | 124,525.00 | 2,528,119.50 |
| 1900 | 19,238 | 2,841,890.21 | 120,600.00 | 2,721,290.21 |
| 1901 | | 3,090,200.00 | 129,350.00 | 2,960,850.00 |
| Total | 139,104 | 24,339,300.35 | 2,104,202.85 | 22,235,097.50 |
| Annual average | 17,377 | 2,704,366.63 | 233,800.32 | 2,470,566.31 |
| Annual average per capita[3] | | 152.85 | 14.21 | 138.64 |

[1] Including $1,000,000 for construction of Danville Branch.

[2] Exclusive of $123,058.74 appropriated from posthumous fund.

[3] Exclusive of fiscal year 1901.

The following is a summary of the receipts and disbursements for the fiscal year ending June 30, 1900:

STATEMENT A.—*Receipts and disbursements, National Home for Disabled Volunteer Soldiers, during the fiscal year 1900.*

| | Establishing Danville Branch. | Fiscal year. | | | | Total. |
|---|---|---|---|---|---|---|
| | | 1897. | 1898. | 1899. | 1900. | |
| *General fund.* | | | | | | |
| Balance on hand June 30, 1899. | $31,179.97 | $89.19 | $11,974.70 | $340,218.85 | | $383,462.71 |
| Received from Treasury | 425,000.00 | | 199.42 | 4,691.03 | $2,608,863.46 | 3,038,758.91 |
| Posthumous fund, act Aug. 18, 1894 | | | | | 41,468.82 | 41,468.82 |
| Sales, etc | | | | 178.51 | 67,126.49 | 67,305.00 |
| Transfers and disallowances | 2.75 | 292.92 | 256.30 | 558.78 | 490.93 | 1,601.68 |
| Total | 456,182.72 | 382.11 | 12,430.42 | 345,647.17 | 2,717,949.70 | 3,532,592.12 |
| Accounted for as follows: | | | | | | |
| Disbursements | 360,573.75 | | 1,616.46 | 147,999.59 | 2,277,517.96 | 2,787,707.76 |
| Deposited in Treasury as surplus | | 89.19 | 10,346.70 | 179,514.03 | | 189,949.92 |
| Transfers and allowances | | | 199.42 | 361.36 | 454.96 | 1,015.74 |
| Total | 360,573.75 | 89.19 | 12,162.58 | 327,874.98 | 2,277,972.92 | 2,978,673.42 |
| Balance on hand June 30, 1900. | 95,608.97 | 292.92 | 267.84 | 17,772.19 | 439,976.78 | 553,918.70 |
| Total | 456,182.72 | 382.11 | 12,430.42 | 345,647.17 | 2,717,949.70 | 3,532,592.12 |
| *State aid.* | | | | | | |
| Balance on hand June 30, 1899 | | | 21.93 | 154,135.94 | | 154,157.87 |
| Received from Treasury | | | 4,978.07 | 113,731.06 | 750,000.00 | 868,709.13 |
| Total | | | 5,000.00 | 267,867.00 | 750,000.00 | 1,022,867.00 |
| Acounted for as follows: | | | | | | |
| Disbursements | | | 5,000.00 | 267,867.00 | 712,328.69 | 985,195.69 |
| Deposited in Treasury as surplus | | | | | | |
| Total | | | 5,000.00 | 267,867.00 | 712,328.69 | 985,195.69 |
| Balance on hand June 30, 1900. | | | | | 37,671.31 | 37,671.31 |
| Total | | | 5,000.00 | 267,867.00 | 750,000.00 | 1,022,867.00 |

The appropriation accounts for the various fiscal years may be summarized as follows:

STATEMENT B.—*Appropriations.*

| Appropriations. | 1897. | 1898. | 1899. | 1900. | Total. |
|---|---|---|---|---|---|
| Balance in Treasury June 30, 1899 | | [1] $564,604.61 | $559.16 | | $565,163.77 |
| Amount of appropriations | | | 4,123.50 | $2,839,890.21 | 2,844,013.71 |
| Unexpended balance deposited | $89.19 | 10,346.70 | 179,514.03 | | 189,949.92 |
| Total | 89.19 | 574,951.31 | 184,196.69 | 2,839,890.21 | 3,599,127.40 |
| Remitted to disbursing officers | | 425,199.42 | 4,691.03 | 2,606,863.46 | 3,036,753.91 |
| Paid on Treasury statements | | 166.56 | 543.61 | 92.00 | 802.17 |
| Covered into surplus fund | 89.19 | 148,677.75 | | | 148,766.94 |
| Total | 89.19 | 574,043.73 | 5,234.64 | 2,606,955.46 | 3,186,323.02 |
| Balance in Treasury June 30, 1900 | | 907.58 | 178,962.05 | 232,934.75 | 412,804.38 |
| Total | 89.19 | 574,951.31 | 184,196.69 | 2,839,890.21 | 3,599,127.40 |

[1] Includes establishment of Danville Branch.

The following is a brief statement of the appropriations, the net disbursements, and the unexpended balances relating to the several fiscal years:

| | 1893 and certified claims. | 1894. | 1895. | 1896. |
|---|---|---|---|---|
| Appropriated | $2,618,215.49 | $2,379,872.99 | $2,324,473.00 | $2,514,846.00 |
| Posthumous fund | | | [1] 177,044.05 | 20,833.11 |
| Total | 2,618,215.49 | 2,379,872.99 | 2,501,517.05 | 2,535,679.11 |
| Net disbursements[2] | 2,505,426.80 | 2,197,441.06 | 2,224,591.29 | 2,311,927.59 |
| Balance unexpended | 112,788.69 | 182,431.93 | 276,925.76 | 223,751.52 |
| Total | 2,618,215.49 | 2,379,872.99 | 2,501,517.05 | 2,535,679.11 |
| Covered into Treasury on surplus warrants | 112,788.69 | 182,431.93 | 276,925.76 | 223,751.52 |

| | 1897. | 1898. | 1899. | 1900. | Total. |
|---|---|---|---|---|---|
| Appropriated | $2,492,183.16 | [3] $3,424,975.00 | $2,652,644.50 | $2,841,890.21 | $21,249,100.35 |
| Posthumous fund | 23,984.68 | 13,469.93 | 21,960.58 | 20,752.90 | 278,045.25 |
| Total | 2,516,167.84 | 3,438,444.93 | 2,674,605.08 | 2,862,643.11 | 21,527,145.60 |
| Net disbursements[2] | 2,340,421.97 | 3,192,982.79 | 2,477,870.84 | 2,189,731.58 | 19,440,393.92 |
| Balance unexpended | 175,745.87 | 245,462.14 | 196,734.24 | 672,911.53 | 2,086,751.68 |
| Total | 2,516,167.84 | 3,438,444.93 | 2,674,605.08 | 2,862,643.11 | 21,527,145.60 |
| In United States Treasury | | 907.58 | 178,962.05 | 232,934.75 | 412,804.38 |
| Covered into Treasury on surplus warrants | 175,452.95 | 148,677.75 | | | 1,120,028.60 |
| In hands of disbursing officers. | 292.92 | 95,876.81 | 17,772.19 | 439,976.78 | 553,918.70 |
| Total | 175,745.87 | 245,462.14 | 196,734.24 | 672,911.53 | 2,086,751.68 |

[1] Includes $152,232.63 posthumous funds, act Aug. 18, 1894.
[2] Disbursements less proceeds of sales and repayments.
[3] Including $1,000,000, "Establishing Danville Branch."

## SOLDIERS' HOME, DISTRICT OF COLUMBIA.

The annual inspection of the Soldiers' Home, District of Columbia, its records, accounts, management, discipline, and sanitary condition was made during the week ending July 14, 1900, under the act of March 3, 1883.

The Home was generally in excellent condition throughout, and the improvements and repairs accomplished during the year, amounting to about $150,000, are a decided advance toward increasing the comfort, contentment, and convenience of the men for whose benefit this magnificent institution was established nearly half a century ago. The enlargement of the King Building, giving room for 125 additional beds, and the annex to the hospital, with an increased capacity of 30 patients, are the most important changes effected during the year. The installation of elevators in these buildings and of other modern improvements and appliances meets a long-felt want, and makes the need for them in the larger central barracks still more evident.

The officers of the Home are efficient and painstaking, and devoted to their duties; but the number seems insufficient, and it would be beneficial if an adjutant were added to assist the governor in the multifarious details connected with the administration of this large and growing institution. The number of officers has remained stationary since these inspections began in 1883, but the number of members has more than doubled, and is constantly increasing, and the value and importance of the plant has correspondingly increased.

The average number present during the past year was 832; and 504, or about 38 per cent of the total membership, was constantly absent, including 415 members on outdoor relief. The system of outdoor relief practiced at this Home seems to be one of its commendable features, and has the double advantage of pleasing the beneficiaries and of effecting a large annual saving, the relief paid averaging only about half of what it costs to maintain a member at the Home. The Volunteer Homes do not bestow much outdoor relief, though they are authorized to give it.

The discipline seems to have greatly improved during the year, and a decrease is noted in the number of both offenders and offenses. But even among these diminished offenses the desire for liquor continues to be the principal cause of most derelictions. In the Army and at the Volunteer Homes post exchanges are generally in favor, but such an institution has never been tried here. It would doubtless, as elsewhere, conduce to the comfort, economy, and good behavior of those who benefit from it.

The books, accounts, and disbursements of the treasurer, covering the period from July 15, 1899, to June 30, 1900, were inspected and appeared to be correctly and neatly kept, though it was noted that apparently two sets of books are being kept, and the usual fiscal year ignored. Under present methods of disbursing the pension fund the treasurer is compelled to carry large balances from month to month, remaining unpaid in his hands, and averaging over $47,000. Some of this money belongs to members in the insane asylum. Would it not be better to allow this to drift into the permanent fund where it seems equally secure?

The condition of the permanent fund is shown in the following table:

| | |
|---|---|
| Balance October 1, 1899 | $2,582,016.81 |
| Credit settlement | 228,724.87 |
| Total | 2,810,741.68 |
| Drawn for current expenses | 254,000.00 |
| Balance June 30, 1900 | 2,556,741.68 |

This balance is lower than reported for several years past, which seems to be due to delayed credit settlements and to a greater withdrawal for current expenses on account of extensive permanent improvements, though the amount involved in the credit settlements have greatly increased in the past nine months. The improvements may also account for the large increase in the number of civilian employees during the year.

Considerable attention has been given to farming and dairying, but it is questionable whether attempts of this nature, except by professionals, are sufficiently remunerative to warrant their continuance. It is difficult for whatever luxury there is about them to reach every member of the home equally. At the volunteer homes they have generally fallen into disfavor, and the herd at this Home was killed in 1893 on account of tubercular infection, though its economy or propriety had already been questioned. The present herd, of which the nucleus was formed in 1897, numbered at date of inspection 59 animals, and the value of the milk yielded during the year just about equaled the cost of maintaining them, according to the figures reported by the home. Would it not be better to limit its use wholly to the hospital?

The sanitary condition of the home seems excellent; and the hospital has been thoroughly refitted with the most modern appliances, including X-ray and sterilizing rooms, and provided with a very satisfactory dining-room service, and seems at present well equipped to take care of the sick. The average daily number of patients was 81.7 in hospital and 8.6 at sick call, and a total of 3,651 received medical treatment during the year. The number of deaths was 78, giving a death rate of 58.38 per 1,000 of the average present and absent. This seems high compared with the volunteer homes, but nearly 50 per cent of the deaths occurred outside and are included in the death rate. The surgeon was absent in Europe at the time of inspection. A monthly sanitary inspection and report to the board by him on the sanitary condition and requirements of the whole home in all its parts, as is done at our military posts, seems desirable here.

The fine condition of the home and the excellent care given the members reflects great credit upon the officers; and the fine spirit in which matters are run and the system of improvements inaugurated mark the present administration.

## UNITED STATES MILITARY ACADEMY.

An inspection of this admirable institution was made by the Inspector-General, commencing May 14, 1900, the first inspection by an officer of the Inspector-General's Department since October, 1897.

It was understood that no matter affecting the curriculum was to be inquired into during this inspection, and these restrictions were observed. The usual effort to see at least a sample of every person, thing, place, disbursement, or duty there accessible during inspection was faithfully made.

If general inspections are to continue in the Army, the cadet should be familiar with it as in times past; and if it were as free and full as possible, only additional commendations would be won for the work being done and warm admiration for the perfection of much of it and equal encouragement offered for the highest improvement of all matters that attract attention.

The condition of the post and Academy and of the several departments connected therewith and the progressive spirit at present prevailing bear witness to the efficient and wise administration and the enthusiasm for their work of the superintendent, Col. A. L. Mills, the commandant of cadets, Lieut. Col. O. L. Hein, and the corps of officers and instructors. It is an institution which habitually wins commendation and exacts unfaltering attention to duty. It lives upon a high plane, and its tone is true.

The aim and purpose of the Academy are well understood, and theoretical and scientific instruction is happily blended with practical work so as to enable the cadet upon leaving the Academy to discharge at once the full duties of his chosen career in all its ramifications. The course of study has been constantly improving, and the graduates are better equipped to assume the functions and responsibilities of their profession than ever before in the history of the institution. All the changes made seem in the right direction and tend to encourage the cadet, give him an opportunity to bring out his best qualities as an officer, and teach him confidence and reliance.

The introduction of well-considered innovations is calculated to prevent stagnation, which is one of the greatest evils to be dreaded in military life.

Minor matters.

The time approaches when one or two additional professors will be needed. Electric-lighting plant seems indispensable, and much better light in cadet barracks and nearer to the book for studying; two of the docks are in bad condition; a modern battery for use in the instruction of the cadets, complete in all its details and furnished with all modern appliances, should be provided; an additional magazine for storing filled shells, rockets, primers, and fixed ammunition needed; some provision should be made for stabling the horses of officers; it may be advisable to restore old Fort Putnam, from an historical interest; old wooden fences should be replaced by iron ones; quarters for officers insufficient.

It is suggested that a board of officers be appointed to consider the subject of the probable enlargement of the post and to submit a plan on which future improvements can be made so as to obviate all hap-hazard locations and patchwork. Some of the present buildings are inconveniently located or have been added to from time to time, which could have been avoided had such a plan been in existence.

A full report may be found in Appendix C.

## MILITARY COLLEGES.

This is the first year since the mobilization of the regular and volunteer forces for the short but decisive campaign against Spain and the subsequent occupation of our new possessions that a general systematic inspection of the military departments of institutions of learning having an Army detail or Government arms and equipments has been made. The causes that operated against these inspections in the past two years are well understood. In the spring of 1898 all active officers serving as professors of military science and tactics were withdrawn, as the country needed them for the more exacting and the highest duties of their profession, and the unsettled conditions after the cessation of hostilities with Spain in Cuba and our new possessions, and lately also in China, continue to retard their return to college duty. But it is believed, however seriously the institutions suffered, that they have generally recognized and accepted the demands of the Government in a loyal spirit and used every effort to continue military instruction on the system gradually developed during past experience or on the plans instituted by the military professors. Possibly the detail of retired officers had not been generally favored before by the colleges, and there were only five on such duty when the active officers were recalled during the first stages of preparing for the Spanish campaign; but within the past year they have been in greater demand, and their details were gradually augmented until there were 30 when these inspections began, and at present there are 43, representing every rank from lieutenant to colonel. It is very desirable and sincerely hoped that the War Department may succeed in providing each of the 110 institutions having Government arms and equipments with a capable and acceptable military instructor. Much of this military instruction, so fairly distributed throughout the country, was instituted amid the severest strain of war; and any patriotic citizen who appreciates all that war demands when our young men are called to arms may well rejoice at whatever superiority may be reached in the faithful and efficient instruction for this duty in readiness for our country's call to arms, military duty involves human lives and ignorance aids no one in its performance.

Inspections.

Under the instructions issued this year, 67 colleges were visited by officers of the Inspector-General's Department and 24 by officers specially detailed for the purpose. Thirty of these visits were made to colleges having a detail of a retired officer, and contemplated an inspection of their military departments, and 61 contemplated an inspection of the Government arms and equipments only; but it seems significant that the inspections at quite a number of colleges having no detail included, by special request of the college authorities, the entire corps of cadets. Thus, 7,311 cadets at 52 colleges, or an average of 140 per college, were inspected in ranks. How fine a body of young men the greater part of these presented and, despite disadvantages, how many improved these military opportunities, need not be said. How much the instruction and practice offered may be improved has been demonstrated again by experience in war. Inspections are frequently asked for, and it is generally conceded that they have a most salutary effect upon the military departments; they not only inspire to better efforts and effect remedies of existing defects, but they impart a feeling of national importance, give renewed life and interest, and are generally looked forward to with interest and pleasure by both college authorities and students as one of the principal events of the school year. The connection of the War Department with these colleges dates back to July 28, 1866, when the detail of army officers as military instructors was first legalized; and of this Bureau to 1886, when these inspections were first ordered. It may be a mere coincidence, but nevertheless it is noticeable that these inspections were followed by a large increase of both army details and students under military instruction, and possibly by improvements in the extent and excellence of the military knowledge and proficiency. Since they began, the details have more than doubled and the attendance about quadrupled, until just previous to the Spanish war, when there were over 100 officers detailed as military instructors and over 18,000 students enrolled in the military departments, and the conditions were more satisfactory in every respect than ever before and a progressive spirit and fine enthusiasm had developed in many points.

Some of these colleges may afford an illustration of the value of inspections, and it is a pleasure to see their military feature hopefully resumed. Now that experienced inspectors again show the interest of the War Department, it is felt improvements are sure to follow; and it is firmly expected that nothing but good will flow from a continuance of the best attainable military branches at these institutions and of these annual inspections of colleges. If our civil and military authorities desire the very best, it is difficult not to believe the best is attainable. And the future promises to make them very much more needed than the past.

Students.

With so many colleges without any army detail, it was hardly expected that the reports showing the operations of the military departments during the past year would be as full or complete as they were formerly. In many instances no records whatever were kept, and it is therefore not possible to present complete statistics on the subject.

From the reports received it appears that at 76 colleges 30,125 students matriculated during the year, giving an average number of 396 matriculants per school, which is an increase of six over the number reported in 1897, when these reports were last made. Over 90 per cent of these students were over 14 years of age. At 76 colleges the military departments report an enrolled strength of 16,244 cadets, and at 82 an average of 14,389 cadets under military instruction, giving for each military department an enrollment of 214 and an average attendance of 175 cadets during the year. The average age of these cadets was about 18 years, and ranged between 12 and 23. Information is given in greater detail in Appendix D, to which attention is invited. Only 13 colleges out of over 100 are definitely known to have discontinued military instruction upon the withdrawal of the army officer, and several of these are now making arrangements for a resumption of this work.

The military organizations of the cadets are similar to those in the the army. The infantry company is the unit, and regiments and battalions have been organized where the number of companies is sufficient for that purpose. Among the 74 colleges reporting on the subject, there were 5 regiments, 56 battalions, and 228 companies. In addition there were also reported a number of detachments, such as artillery, cavalry, signal, bicycle, etc., which are formed for purposes of instruction, though usually composed of members belonging to the regular infantry organizations. The strength, on the day reported, of the military organizations heard from is shown in the following table, to which a statement of the conditions in 1897, when military instruction was at its height has been added, so the two years can be readily compared:

| Year. | Colleges reporting. | Organizations. | | | Strength. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Field and staff. | | Line. | | | | |
| | | Regiments. | Battalions. | Companies. | Officers. | Noncommissioned officers and band. | Officers. | Noncommissioned officers and privates. | Total. | Average per college. | Average per company. |
| 1897.... | 101 | 4 | 92 | 301 | 226 | 963 | 896 | 11,471 | 13,556 | 135 | 45 |
| 1900.... | 74 | 5 | 56 | 228 | 207 | 830 | 667 | 9,350 | 11,054 | 149 | 48 |

This table speaks well for 1900, and may serve to indicate how firmly the military feature has been embedded in some of these colleges. Judging from numerous reports and letters on file in this office, military instruction is held in high esteem by the authorities, and where it has once been introduced and given a fair test it is seldom permitted to retrograde. Perhaps the wave of military enthusiasm that swept over the country two years ago and left its impression upon these colleges may account in part for the increase in the average strength of these military organizations.

The discipline of the cadets has been generally good, though in several instances deterioration and laxity of methods have been reported; due, it seems, to the absence of a regular military instructor. At 22 colleges the discipline was reported purely military, at 10 civil, and at 41 a mixture of the two. It is the concurrent opinion of inspecting officers that the best discipline from a military point prevails at colleges where all the students are under military instruction and constantly under military restraint, and where they practice marching formations for however short a time on all occasions of assemblage. Though this practice may be wholly feasible only at such institutions as furnish board and quarters for a considerable percentage of their students, some suggestions concerning quartermaster as well as ordnance supplies and additional rewards or recognition have been received.

**Instruction.**

Under the provision of General Orders, No. 70, Headquarters of the Army, December 11, 1897, which are the latest regulations in force governing the course of instruction and other matters, such as detail of officers, issue of arms, etc., at least two hours per week must be devoted to practical and one hour per week to theoretical instruction, and as a rule this minimum requirement has been faithfully observed when possible, even where no army detail has been furnished, and some institutions give much more. The maximum number of hours devoted to military work during the past school year of about forty weeks was reported as two hundred and forty for the theoretical and five hundred and forty for the practical course. The latter is made the more important at the great majority of the colleges, though at a limited number considerable stress is laid upon the theoretical course. The best results seem to be accomplished where proper credit is given for military instruction, and where proficiency in the elementary theory and practice of military science and tactics is made necessary for a diploma.

Major E. L. Huggins, inspector-general Department of the Lakes, reports:

> The highest efficiency is attained at the strictly military schools, and all possible encouragement should be given them. I am of the opinion, however, that even at those institutions where the minimum results are obtained, these results are such as to warrant the continuance of the aid now given by the Government.

The following table exhibits some of the exercises held at these colleges during the past year and in 1897:

| Military exercises. | Number of institutions at which held. | |
|---|---|---|
| | 1897. | 1900. |
| Number of colleges reporting | 101 | 80 |
| Infantry drills | 101 | 69 |
| Competitive drills | 60 | 42 |
| Signal drills | 62 | 35 |
| Dress parades | 80 | 60 |
| Street parades | 61 | 51 |
| Guards: | | |
| Mounted and maintained | 38 | 35 |
| Mounted for instruction | 13 | 3 |
| Officer of day detailed | 61 | 52 |
| Encampments held | 16 | 18 |
| Practice marches | 23 | 26 |
| Problems in minor tactics | 43 | 19 |
| Target practice | 53 | 35 |
| Position and aiming drills | 52 | 21 |
| Gallery practice | 26 | 11 |

This table is not intended to exhibit all the practical work done during the year, but will aid in illustrating how well these exercises have continued without the supervision of an army officer. Problems in minor tactics have been largely omitted, and the cause of this omission may not be far to seek; but an increase is noted in practice marches and encampments, which usually furnish excellent opportunity for a practical demonstration of the instruction given during the year.

Theoretical instruction has been confined mostly to lectures and recitations in Drill Regulations and Guard Manual, the elementary principles of the art of war, and the organization and administration of the Army, and to instruction in the preparation of company reports and returns. How to enlist the interest and catch the minds of the volunteer students for essential and fundamental military knowledge and principles is the highest test of the skill and professional enthusiasm of these temporary detailed instructors. This instruction is principally given to the officers and noncommissioned officers, and at some colleges to the senior class also; but it is not compulsory at all colleges and there are no fixed text-books, so that the final results must show great variations. Evidently it should not be so limited. At 10 colleges the cadets were required to prepare military essays. If every military graduate were capable of caring for a company in the first stages of mobilization or of recognizing the correct principles and requirements of a campaign, it might impose a good deal of tiresome work on the cadets, but would prove a boon to the community in case of war, when so much ignorance and folly fill the air on a matter of life and death. In a free country the possession of such essential knowledge and military qualities makes marked men in the exigencies of every generation.

Arms and equipments.

The small arms issued to these colleges consist of the caliber .45 Springfield rifles and accompanying accouterments. At the close of the year there were about 110 colleges that had been supplied with these arms in varying quantity, the total amounting to about 16,000 rifles. A few of the colleges had signified their intention of returning their Government property to the Ordnance Department, but were holding it in abeyance pending the result of their endeavors of securing an army detail, and two new colleges were awaiting their first supply.

The property was generally in fair condition and at many of the colleges well cared for; but, of course, such a caliber is obsolete and as a rule needs better attention than it has received in the past. Where a retired enlisted man or old soldier has been employed by the college authorities to look after the Government property it was generally found in excellent condition; but all these rifles are antiquated and do not meet the modern requirements of war and should be replaced by the latest model as soon as the exigencies of the service will permit, in order that the cadets may learn to handle the rifle which they will be compelled to use in the active service of their country. Perhaps some fairer system about this property, both for the Government and the colleges, might be devised, so what is needed can be more readily obtained and accounted for.

The field pieces issued to these colleges are limited to the 3-inch muzzle-loading wrought-iron rifled guns and to the 3.2-inch breech-loading steel field guns. The latter were mostly recalled during the Spanish war and have not yet been generally replaced. The muzzle-loaders are obsolete as a weapon of war, but will serve for firing salutes and for ornamental purposes. Under the act of May 23, 1896—

> The Secretary of War and the Secretary of the Navy are each authorized, in their discretion, to loan or give to soldiers' monument associations, posts of the Grand Army of the Republic, and municipal corporations, condemned ordnance, guns, and cannon balls which may not be needed in the service of either of said Departments. Such loan or gift shall be made subject to rules and regulations covering the same in each Department, and the Government shall be at no expense in connection with any such loan or gift.

This act might very properly be amended to include institutions of learning where military science and tactics are taught, as they are valuable factors in disseminating military instruction and usually have large and handsome grounds for the reception of such old guns and cannon balls. The old muzzle-loaders, for which they are now responsible and heavily bonded, could then be condemned, if necessary, and presented to them. But for purposes of artillery drills, which were held during the past year at 32 colleges, the 3.2-inch breech-loaders and machine guns should be supplied in each case. Much of this condemned ordnance is being rapidly sold, and those wishing samples should take prompt action.

Remarks.

The purpose for which military instruction was extended to every section of our country and made obligatory at all land-grant colleges benefited by the act of July 2, 1862, enacted at a time when this country was engaged in a fierce civil struggle, is well understood. America has definitely determined that the benefits of the education at her Military Academy are of the utmost consequence in the successful conduct of war, and has clearly indicated her policy in the attempt to disseminate certain rudimentary instruction of the first principles and simpler practice of the trade by two parallel streams of legislation—one establishing colleges teaching agriculture and the mechanic arts, including "military tactics," and the other authorizing the detail of more than 100 army and navy officers as professors of military science and tactics at selected colleges having facilities for at least 150 students each and in the aggregate more than 30,000 students and located in every State. How great a part the graduates of these accessory institutions are to play in the wars and military development of our country is left for the future to demonstrate. Information concerning their participation in the Spanish war is meager indeed. The reports from 58 colleges so far received show that they furnished 1,084 commissioned officers and 2,146 enlisted men; or enough partially trained officers for 7 brigades and enough enlisted men for 2 regiments. These figures are suggestive, and rather below than above actual conditions, and if complete returns were at hand from every one of the hundred or more colleges giving military instruction the numbers would perhaps be doubled. For more detailed information attention is invited to Appendix D. One of the large universities alone furnished 2 brigadier-generals, 3 colonels, 5 lieutenant-colonels, 10 majors, 21 captains, and 55 lieutenants; and at one or two, the cadets tendered their services in a body, but not being members of the National Guard they were not accepted. And doubtless had the call for volunteers been larger, or less restricted to selection from the National Guard, a still better showing would have resulted. Many of the graduates and students served as noncommissioned officers and privates because commissions were not within reach. In the profession of arms the test of war is alone accepted as being adequate to prove the quality of the graduates of any institution. Will and enthusiasm were there, and the material furnished was superb; and if these are the results of the system of military instruction it deserves the fullest support of the Government.

Some of the needs of the colleges have been discussed from time to time in former annual reports and may not need repetition here. But the most pressing and immediate necessity seems to be the speedy detail of a sufficient number of capable and enthusiastic army officers to continue the work, which has already proven of great benefit to the Government as well as to the colleges and students, and must add in a large measure to the ultimate security of our people. The Inspector-General's Department is ready and willing to aid and do its fullest share in attaining the best results.

## CONDEMNED PROPERTY.

Any carelessness in disposing of Government property, even by sale and still more by destruction or waste, may occasionally bring profit to individuals, but can not benefit the public service or funds. The clash of public with private interests may render this branch of business more difficult to maintain in the face of insidious opposition; but as the articles inventoried are numbered by the million and originally cost millions of money the duty has a certain importance as long as it is steadfastly sustained. How well it has been sustained by all the abler Secretaries of War is sufficiently illustrated by the results.

The elimination of public property from the service is a special feature of the duties imposed by law and regulations upon the inspection department; but until 1892 it appears that no systematic record was ever regularly kept by the majority of the supply departments of the total amount of public property presented for condemnation, nor of the amount considered fit for further use by the inspector and retained in service, nor of the value of the property thus eliminated or saved in the public service. If they could yet do so for a single decade since 1860 and prior to 1890 it would be very instructive information. The importance of such information and the economy resulting from a prolonged life of the property were early recognized and resulted in the promulgation, on January 29, 1892, of General Orders, No. 8, which required that one copy of each inventory and inspection report be forwarded to this office; and on April 4, 1892, the Commanding General of the Army issued instructions to department commanders requiring that, wherever possible, the original cost of the property inventoried should be given, or, if that be impracticable, the current price. These measures are now covered by Army Regulations and, with the auction-sales' lists, have enabled this office to present fairly accurate and complete information on the subject. If the supply departments could find time or occasion to crystallize similar information, it might be more complete for each, and the economy of the service be further promoted.

The total number of inventory and inspection reports received at this office during the year ending June 30, 1900, was 3,521 against 3,425 for the preceding year, and 1,731 for 1897, and about ten a day or twice as many as formerly. The subdivisions of these inspections are shown in the following table:

| Inspections made by— | Fiscal year 1897. | | Fiscal year 1899. | | Fiscal year 1900. | |
|---|---|---|---|---|---|---|
| | Number. | Per cent. | Number. | Per cent. | Number. | Per cent. |
| Inspectors-general | 1,438 | 83 | 210 | 6 | 417 | 12 |
| Inspectors-general, volunteers | ........ | ........ | 877 | 26 | 584 | 17 |
| Acting inspectors-general | (a) | (a) | 1,013 | 29 | 1,105 | 31 |
| Special inspectors | 293 | 17 | 1,325 | 39 | 1,415 | 40 |
| Total | 1,731 | .......... | 3,425 | .......... | 3,521 | .......... |

a Very few and included among number for inspectors-general.

This table shows an increase in the number of these inspections made by special inspectors, which appears to be due to the exigencies of the service and indicates indirectly pressure of other work and the need of more inspectors-general. There is no branch of inspection work which more clearly subserves economy in the use of public stores, and more greatly needs responsibility and experience and supervision in the business. The orders on the subject are based on purely business principles; and it has been the endeavor of this office to have these inspections made as far as practicable by officers of this department with due regard to an equitable distribution of duties and economy in travel during one of their triennial tours. No other class of officers can perform the duty more efficiently nor economically. The magnitude of this branch of the inspection duties may be indicated by the value and number of articles, including units of weights and measures submitted for condemnation, each of which must be examined by the inspecting officer as required by Army Regulations. It is a wearisome and unpleasant job; but possibly much more than the entire expense of the inspection service is made good by the faithful performance of this duty. The reports received during the past fiscal year show that 54,850,791 articles were inspected, and that of this number 54,134,386 were condemned and 716,405, or 1.3 per cent, retained in service. During the preceding fiscal year, when there were fewer special inspectors, 7,952,911 articles were condemned and 1,427,159, or about 15 per cent, retained in service. How much of this difference was unnecessary loss may not need calculation nor be indicated in the per capita disbursements, but it can hardly be without interest wherever economy is to be subserved. Less than half of the articles presented for condemnation had their original cost price given. Can this be entirely right or desirable? But by applying their value to the other articles, the total inspections of property and stores approximated very closely $8,689,350.88 condemned and $1,320,547.05 retained in service, showing an increase of more than $7,000,000 inspected over the previous year. Reduced to the per capita of an army of 100,000 men, which is about the total enlisted strength of ours, the articles condemned during the year amount to $86 and retained in service to $13 per man.

These figures seem more striking when it is recognized that they are additional to all expendable articles or those eliminated by issue. Though a few millions more or less need not bother, as they merely show the absolute necessity of careful supervision and close scrutiny if the interests of the Government are not to suffer. It may be well to note that the mileage for this whole corps in connection with every form of inspection, during which this is taken incidentally as a minor part, is only about $7,769 and that appropriated for the whole Army $500,000; so the fragment involved in handling these millions of dollars' worth of public property is hardly a perceptible percentage of the total expenditure when offset by the savings or better care effected in property measured by the millions. As this duty may be so easily resisted or ignored, some comprehensive view of its magnitude may better indicate what consideration is due it. Like other branches of our duties, whether prescribed by law or orders, this is neither sought nor shunned by this Department. If it is desired to assign it to others, we have no objection to offer. If it is to remain as a part of our duties, we ask to be given adequate force, free from trammels of other bureaus, and beg to thank the honorable Secretary of War for the considerate support he has extended to this very wearisome and exacting duty.

Attention is invited to Appendix F, which contains a statement showing the total amount and partial value of the property inspected and condemned and retained in service for the past two fiscal years, classified under various headings. The statement shows an especially large increase in the condemnations of property pertaining to arsenals and armories, military posts, and the artillery arms of the service, which appears to be due to the effort made during the year to rid the Army of a large amount of unserviceable and obsolete ordnance and ordnance stores that had been accumulating for years and took up valuable and needed storage space at various places. Recommendations to this effect may be found in annuals from this Bureau. The following was reported in 1897:

> At many posts and arsenals there are quantities of old, useless, and obsolete ordnance and ordnance stores which are a nuisance and a burden to those who have to care for them. It would seem to be good policy to have them condemned and distributed or disposed of.

But an increase, though not so pronounced, is also noted in the condemnations of property pertaining to other departments, except in the case of public animals and of property of volunteer troops, which show a decided decrease; and it is understood some stores were sold or disposed of without such inspection prior to the Judge-Advocate-General rendering the following opinion (indorsement of Sept. 12, 1899):

> The Constitution gives to Congress the "power to dispose of and make all needful rules and regulations respecting the territory or other property belonging to the United States," and it is well settled that no public property can be disposed of without the authority of law, either by an express act of Congress for that purpose or by giving the authority to some department or subordinate agent. Congress has given authority to "cause to be sold any military stores which, *upon proper inspection or survey*, appear to be damaged or unsuitable for the public service" (Sec. 1241, Rev. Stat.); but no authority to sell military stores which have not been condemned as unserviceable, and the sale of the mules in question was therefore illegal.

Generally, the year is marked by an unusual activity in this branch of the inspection service, and there seems to have been a commendable effort to subserve the interests of the Government.

It is greatly regretted that the cost price of all the articles presented for condemnation is not given by the responsible officers, and that it can not be ascertained nor accurately computed in this office on account of the limited clerical force; and approximations, therefore, must be accepted in determining the total value of all the property condemned or retained in service. Lack of clerical force in this office has also stood in the way of ascertaining the normal life of the various articles, which is an important element in the economic administration of affairs and would greatly aid the inspector in determining the most advantageous disposal of the property. With over $1,000,000 worth of property retained in service, representing in dollars and cents the difference of opinion between the inspector and the inspected, it seems the savings effected in this branch of the inspection service alone have paid many times the entire annual cost of maintaining the corps of inspectors. And it is firmly believed that under a more liberal provision of officers and clerks a still better showing can be made. The principal and immediate needs of the inspection department can be expressed in a few words: More regular inspectors and additional competent clerks. This is a simple business proposition by which the employer gains.

Occasionally unserviceable property and stores are disposed of which are not reported to this office, or of which the copy intended for this office is lost, so that the real conditions must exceed the figures reported. For instance, in May last, 2,861 khaki coats and 186 khaki trousers were disposed of in Havana, Cuba, at public auction; but no report has yet reached this office showing that these articles were acted upon by a regularly authorized inspector previous to their elimination from the public service.

Subsistence stores.

Quite a large amount of perishable articles, mostly subsistence stores, amounting in value to over $290,000, was condemned during the year. In some instances the cause of damage was found to be due to defective packing and appeared to be the fault of the contractors; but frequently changes of climate and difficulties of transportation had a very deteriorating effect upon these stores, and some of them had been on hand for more than a year. A list of the principal articles of subsistence stores condemned during the year in the various countries occupied by our troops, and on transports, is shown in Appendix G.

This statement shows the largest condemnations in the Philippine Islands ($113,816.28) and the smallest in Alaska ($112.10), as might be expected from the number and occupation of the troops there, and perhaps from climatic conditions. The condemnations in other places were: United States, $84,814.17; Cuba, $56,492.06; Porto Rico, $16,416.80; Hawaii, $249.42; and on transports, $18,885.25. Fresh vegetables (onions and potatoes) were the only articles condemned at all the places mentioned, amounting in value to over $13,000. The greatest losses occurred in bread, plug tobacco, and bacon, ranging in round figures from $69,000 for bread to $44,000 for bacon, and amounting for these three items alone to over half of the total condemnations reported in subsistence stores. Among the other items the condemnations between $30,000 and $20,000 embraced smoking tobacco and canned tomatoes; between $20,000 and $10,000, flour, fresh vegetables, and beef; and less than $5,000, dried and canned fruits, coffee, cheese, hominy, pork, yeast, crackers, ham, sugar, butter, cigars, vinegar, oatmeal, lard, corn meal, beans, rice, eggs, macaroni, and cigarettes, the last five articles falling below the $1,000 mark each. Some of these articles are in the sales list and some in the issue list; but it is not the desire of the Government to stick the soldiers in the trenches with such losses in either list, as the adopted policy is to equalize the service as far as possible in these matters. These figures are well worth studying, and, it is hoped, may indicate in what direction the attention of officers interested should be centered in order to effect the greatest possible economy at the least discomfort of the soldier. How well this is being done by the supply departments is a theme of praise on all sides.

Public animals.

Under the provisions of paragraph 879, Army Regulations, all public animals must be inventoried singly preliminary to their presentation for the action of an inspector. From the reports received during the year the following table, showing the number of animals inspected, condemned, and retained in service, has been compiled, and a similar table for the preceding year added, so the conditions for the two years may be compared:

| Animals pertaining to— | Fiscal year 1899. | | | Fiscal year 1900. | | |
|---|---|---|---|---|---|---|
| | Inspected. | Condemned. | Retained in service. | Inspected. | Condemned. | Retained in service. |
| Staff | 3,901 | 3,062 | 839 | 883 | 695 | 188 |
| Posts | 43 | 42 | 1 | 78 | 71 | 7 |
| Cavalry | 1,761 | 1,522 | 239 | 1,227 | 1,111 | 116 |
| Artillery | 150 | 133 | 17 | 237 | 181 | 56 |
| Infantry | 61 | 54 | 7 | 294 | 288 | 6 |
| Volunteer organizations | 821 | 765 | 56 | 29 | 1 | 28 |
| Total | 6,737 | 5,578 | 1,159 | 2,748 | 2,347 | 401 |

The large decrease in the number of animals presented for condemnation during 1900 appears to be due to the return of more stable conditions affecting the Army which, in 1899, experienced many and rapid changes incident to the Spanish war. The money value of the animals inspected during the past year aggregated $160,675 for 1,436, whose cost price was definitely given. This is about 52 per cent of the total number inspected, and gives an average cost of about $112 per animal. Applying this value to the other 48 per cent, from which the cost was omitted, the total inspections amounted to $307,776, and the value of the animals retained in service to $44,912. In 1899, by a similar method, the average cost per animal was found to be about $103, and the value of those retained in service $119,377, so it seems the Government does not lose by having these inspections made by a disinterested corps of inspectors under one central direction. And while the duty is assigned to us it must continue to be thoroughly performed.

Auction sales.

Some difficulty is experienced in obtaining complete returns of sales of unserviceable property. Occasionally property is recommended to be sold by inspectors of which nothing further is heard in this office, though paragraph 679, Army Regulations, explicitly requires that a copy of the auctioneer's detailed account of the sale will be furnished the Inspector-General. The following statement shows the number of reports received and the amount realized during the past two fiscal years:

| Designation. | Reports received. | | Animals sold. | | Proceeds of sales. | |
|---|---|---|---|---|---|---|
| | 1899. | 1900. | 1899. | 1900. | 1899. | 1900. |
| Quartermaster's Department: | | | | | | |
| Supplies | 179 | 232 | | | $47,198.48 | $26,547.41 |
| Horses | | | 1,747 | 1,009 | 51,109.76 | 34,824.62 |
| Mules | | | [1]1,561 | 263 | 103,458.27 | 8,792.98 |
| Subsistence Department | 16 | 48 | | | 656.14 | 16,032.18 |
| Medical Department | 14 | 18 | | | 106.57 | 1,088.67 |
| Ordnance Department | 1 | 8 | | | 2.00 | 8,501.45 |
| Engineer Department | 19 | 27 | | | 5,017.10 | 4,907.70 |
| Total | 229 | 333 | | | 207,548.32 | 102,695.01 |

[1] Including draft horses.

The total proceeds are about 1.2 per cent of the estimated original cost of all property condemned, though in the case of public animals they reach 12 per cent, and would perhaps be still higher if complete information were at hand. The reports so far received account for the sale of only 1,272 public animals out of 2,347 condemned during the year. The average selling price per animal was about $26, which is 23 per cent of the average purchase price. Comparing the proceeds of sales of the past two years, there has been a total decrease of over 50 per cent in the sales of 1900; though in the Subsistence, Medical, and Ordnance departments an increase is noted.

Decade summary.

A summary of the property inspected since 1892, when copies of these reports first reached this office, is exhibited in Appendix H. This summary shows that during the past eight and one-half years 19,847 inspections, exclusive of public animals, were made, involving over 79,800,000 articles, costing over $20,700,000. Of this amount about 19 per cent, representing over $3,800,000, were retained in service and the remainder condemned to be sold or destroyed.

The average annual amount of property retained in service represents a value of over $450,000.

As to public animals, which must be inventoried singly, 17,296, costing over $2,000,000, were inspected during the same period, and of this number 2,407, valued at $279,711.33, were retained in service and the remainder condemned to be sold or killed.

The amounts involved in these inspections of both animals and articles made since the Spanish war were as large as those made during the preceding six years.

Per capita expenses.

Increased expenses are unavoidable in war, but their magnitude and the necessity for them increase the importance of studying the conditions with the utmost detail, as is doubtless being done by all the supply departments. And it may ultimately be possible to submit some approximate figures in regard not only to the cost per man per day for the past, but also we may divide the disbursements in each bureau by the number of enlisted men to obtain a unit of comparative expenditure, as apparently the cost per capita varies somewhat annually, possibly on account of the exigencies of the service. The cost of the stores which the soldier actually uses, and their transportation, and of the property which has been disposed of otherwise—as by sale, condemnation, or destruction—may be accessible information, at least in part, in the departments which furnish these supplies. For the current year it seems that in one department the increase is almost nil, and in another is several times greater than in the lowest former year. It is believed that this would prove to be most instructive information, which, when properly consolidated for the whole War Department, would long be remembered.

It is sometimes said that each soldier costs the Government in the gross appropriation about $1,000 per annum even in time of peace. Unless more definite and detailed information is given, perhaps this empirical statement, though hardly more than approximately correct, may have to be accepted as final, somewhat regardless of the rapidity of expansion or other modifying causes in times of war; which it certainly ought to be possible to determine approximately for expenditures in the War Department.

The fact presented for consideration is the location and control of existing fluctuations in not only the per capita expenses but also the ratio of expenditure to the aggregate of enlisted men and in the items particularly affecting them. For instance, the soldiers' ration being limited, does not necessarily compel the per capita expense involved to be also regarded as equally limited.

In connection with this subject the following tabulations concerning per capita expenses for subsistence at the various branches of the National Home for Disabled Volunteer Soldiers may be of interest:

| Branch. | Fiscal year. | | | | Average. |
|---|---|---|---|---|---|
| | 1896. | 1897. | 1898. | 1899. | |
| Central | $0.1426 | $0.1427 | $0.1413 | $0.1348 | $0.1403 |
| Northwestern | .1504 | .1450 | .1528 | .1571 | .1514 |
| Eastern | .1650 | .1551 | .1610 | .1559 | .1592 |
| Southern | .16 | .1508 | .1475 | .1451 | .1508 |
| Western | .1488 | .1337 | .1434 | .1343 | .1401 |
| Pacific | .1597 | .1577 | .1698 | .1789 | .1665 |
| Marion | .1530 | .1492 | .1461 | .1436 | .1479 |
| Average | .1533 | .1460 | .1517 | .1478 | .1507 |

*Average cost per pound of the principal articles of the ration at National Home for Disabled Volunteer Soldiers.*

| Article. | 1896. | 1897. | 1898. | 1899. | Average. | Maximum year. | Minimum year. |
|---|---|---|---|---|---|---|---|
| Flour | $0.01805 | $0.023 | $0.023 | $0.0184 | $0.027 | 1897<br>1898 | 1896 |
| Fresh beef | .05847 | .0594 | .0688 | .0745 | .06529 | 1899 | 1896 |
| Coffee | .1923 | .17725 | .1103 | .1027 | .14564 | 1896 | 1899 |
| Bacon | .07411 | .06881 | .0798 | .751 | .07445 | 1898 | 1897 |
| Salt pork | .04978 | .0514 | .058 | .519 | .05277 | 1898 | 1896 |
| Potatoes | .00571 | .0067 | .0131 | .0095 | .00875 | 1898 | 1896 |
| Navy beans | .02199 | .0199 | .0156 | .0212 | .01717 | 1896 | 1898 |
| Sugar "A" | .026826 | .03374 | .0484 | .0466 | .03889 | 1898 | 1896 |

### HISTORICAL ITEMS.

At the close of the century some historical allusions may be pardonable.

The high estimation in which the duties of inspection in our Army have habitually been held is indicated in some measure by the rank given the Inspector-General from the formation of the department, in the early years of the Revolutionary war, as well as by the varied and important duties that have always been imposed upon it, and the expression of favorable judgment by the highest authorities, from Washington down till now. Efficient officers of the Army were from the very beginning selected as inspectors. Baron von Steuben, the most famous Inspector-General of the Continental Army, was given the rank of major-general. He had learned war in service under that past master of the art, Frederick the Great. How he found the American Army at Valley Forge undisciplined and tattered, with very limited military instruction and almost without cohesion, but by conscientious and faithful instruction and inspection converted it into a well-disciplined, self-reliant, compact, and mobile force, and thus aided to make American independence possible, is one of the striking features of that winter of suffering so manfully endured. And he not only performed the duties of inspection, but was at times in command of troops (so setting the example to his successors) and rendered valuable service in that capacity at and prior to the siege of Yorktown. After the retirement of von Steuben the Army itself was reduced almost to nonentity. At one period in its existence the American Army was commanded by a captain, who had the additional dignity of being a major by brevet, and the whole "Army" consisted of only 80 men.

When, in 1798, it seemed that war with France was inevitable, and large levies of troops were called out, Alexander Hamilton was commissioned Inspector-General of the new and large army then created, and was given the rank of major-general. His important influence upon the service, and the further improvements he proposed, both as Inspector-General and while in command, seem hardly to have been properly appreciated, and this second tour of duty in the Army hardly recognized.

In 1780 the Continental Congress provided that the inspectors of divisions (with the rank of colonel and lieutenant-colonel) and the sub-inspectors (with the rank of major) were to act under an inspector-general with the rank of major-general assisted by an inspector-general with the rank of brigadier-general.

In Appendix L is submitted an interesting historical sketch of the Inspector-General's Department, prepared some years ago by Gen. J. P. Sanger, and also a roster of the officers who have been at the head of the Inspection Corps from 1778 to the present time. This roster embraces the names of such memorable officers as von Steuben, Hamilton, Pike, Wool, Croghan, Marcy, and Baird.

Since General Sanger's sketch was prepared (1895) the following events may be mentioned relating to the Inspector-General's Department.

Under General Orders, No. 18, Adjutant-General's Office, March 30, 1895, for the sake of economy and efficiency the country was divided into six inspection districts, and the number of acting inspectors-general was reduced from 6 to 1, and the important duty of inspection was directly under the Secretary of War and the Commanding General of the Army, in the same manner that prevailed when inspection was first adopted and organized under Washington, and under which most admirable results have always been obtained. The system of inspection districts was practically abolished by Special Orders, No. 89, Headquarters of the Army, April 16, 1898, when the members of the Inspection Corps were assigned to duty as inspectors-general at the headquarters of the various military departments about the time the department commanders were assigned to duty in the field for the Spanish war.

The act of Congress approved April 22, 1898, provided 1 inspector-general of volunteers with the rank of lieutenant-colonel for each army corps, and 1 inspector-general of volunteers with the rank of major for each division, which gave for the eight army corps 8 lieutenant-colonels and 24 majors for this department, and left inspections of brigades and separate armies unprovided for. Upon the muster out of the volunteer forces soon after the close of the war with Spain, 3 lieutenant-colonels and 6 majors, inspectors-general of United States Volunteers, were retained in the service of the department by the provisions of the act of March 2, 1899; but necessity has led to the detail of acting inspectors-general, of whom there are at present 6 on duty; and there are also 14 officers attached as assistants, etc.

The act of July 7, 1898, made a temporary increase in the Inspector-General's Department of the Army of 1 inspector-general with the rank of colonel, 1 inspector-general with the rank of lieutenant-colonel, and 1 inspector-general with the rank of major; and by the act of March 2, 1899, these were made permanent.

In the war with Spain 4 inspectors-general were given command in the field with increased rank: Brig. Gen. Robert P. Hughes, who has won commendation in the Philippines; Gen. J. P. Sanger, who commanded a division, and has since superintended the Cuban and Porto Rican censuses; Gen. H. W. Lawton, first a brigadier, who won a major-general's stars at El Caney and in the Santiago campaign, and sealed his devotion to his country with his life's blood in the Philippines; and Maj. Gen. J. C. Breckinridge, who, after his return from the expedition to Cuba, was assigned to the command of the separate army at Chickamauga, composed of the First and Third Divisions of the First Corps and the First and Second Divisions of the Third Corps, and other independent brigades and commands of cavalry and artillery and engineers aggregating over 44,000 men.

## NATIONAL PARKS.

In regard to national parks in California, Lieut. Col. M. P. Maus, inspector-general, U. S. Volunteers, Department of California, makes the following report:

> My observations during inspections for two years of the Yosemite National Park and for the current year of the Sequoia National Park have shown that the Government should take measures to control all the lands, roads, etc., in these parks in order to subserve the objects for which they were set apart and enforce the regulations governing them. Many people visit the Yosemite on account of the beauty and grandeur of the scenery and as a place of recreation. The Sequoia Park is not so much visited, as the roads and trails are difficult and it is not so accessible. A road to the Giant Forest, however, at the present time is being constructed under the direction of Captain West, the acting superintendent.

The protection of watersheds is a most important matter in this country, especially where rains do not fall regularly and where there is a dry period for so many months during the year. The reservation by the Government of forest and the employment of rangers to enforce the regulations and to prevent forest fires will in a great measure carry out this object, but the guarding and protecting of the parks themselves, in order to prevent the grazing of cattle and sheep and the destruction of fish and game, is not so easily accomplished. Troops have been employed in both of these parks for this purpose during this year and last. The patrolling has been done this year in the Yosemite much better than last year, when there appeared to be very little effective work done by the troops.

The laws of the State declare it is a misdemeanor to kill deer after the 15th of September, but after that time, when the laws of the State should be enforced, most of the slaughter of game occurs.

I have twice passed through the Yosemite Valley, and through a large portion of the Sequoia Park, and have only seen one deer in all my travel.

In both of these parks considerable land is owned by citizens who naturally claim rights to live on their property and to graze cattle thereon.

By reference to the map of the Yosemite Valley it will be seen that the western range of townships contains most of the land owned by citizens in this park. It is estimated that between forty and fifty thousand acres are thus owned. A good deal of this land is believed to have been taken up, especially the timber claims, after a bill had been introduced in Congress for the formation of the Yosemite National Park. These people evidently expect to make money out of such claims by disposing of them to the Government at high figures. Such claims, if condemned by the Government in the future, should be paid for simply at the actual cost to the holders at the time they were taken up.

In the same way it is noticed that groves of the great sequoia and redwood trees are being purchased, evidently for the sole object of selling them to the Government at an advanced figure.

The best groves of redwoods are already included within these parks, and it would seem that there ought to be sufficient patriotic spirit among the people of California to protect those groves not now owned by the Government.

It is evidently impossible to protect a park when so much land is owned within its limits by private parties who demand the right to live upon their land and to bring their stock upon it.

Herds of cattle are placed upon land when it is evident that there is not enough grass to feed one-half the number, and it is obviously the intention of owners to allow them to graze on the public domain in violation of regulations.

The additional work of bringing herds of cattle into and out of the reservation, which has to be done by the troops, largely increases their work and the difficulty of performing it.

I would suggest that in the Yosemite Valley the western range of townships, above referred to, be eliminated from the park and all land belonging to the Government therein sold, the proceeds therefrom to be used in the purchase of other lands occupied by individuals within the park, or for the improvement of the park.

In the same way in the Sequoia Park, outsiders should be bought out.

Roads in parks.

In the Yosemite Valley none of the roads belong to the Government, and all are toll roads. The main road through the Sequoia Park belongs to the county. This naturally complicates control.

All roads in these parks should be secured by the Government and made free. It is a hardship and inconsistent with the ideas of a national park for those traveling therein to be required to pay tolls which, in some cases, are excessive. The Tioga road in the Yosemite leads through a most attractive portion of the park, and a reasonable amount expended upon it would put it in good condition. This road was built years ago by a mining company, and was operated for a time as a toll road. For years it has fallen into disuse and out of repair, and it is believed, legally, it could be claimed by the Government.

Early steps ought to be taken to secure all of these roads and place them under Government control.

Forest rangers or guards.

It is believed that the employment of a sufficient number of forest rangers or guards would insure better protection to the Yosemite, Sequoia, and General Grant National parks, and at the same time better enforce the regulations governing them, than a detail of troops, as now employed. Six men for the Yosemite and six for the Sequoia and General Grant National parks ought to be sufficient.

These guards should be selected for their fitness, employed for life or good behavior, and paid a reasonable salary. Good men, it is believed, could be obtained for $60 a month.

A few such men, habituated to mountain life, would do more work than an entire troop of cavalry. It would doubtless be much more economical than the employment of troops.

The cost of maintaining troops is considerably increased in these parks, due to the additional cost of forage and the loss of animals worn out in the service while on such duty. Last year 20 horses were condemned by me as unfit for service, that had been used in the Yosemite, and declared by the troop commander to have been worn out on duty there.

### TRANSFER OF GOVERNMENT IN PORTO RICO.

In connection with the inauguration of a civil government in Porto Rico, Lieut. Col. R. B. Harrison, inspector-general, U. S. Volunteers, reports:

The day after my arrival in the department the transfer of the government of the island of Porto Rico from military to civil control took place under the most auspicious circumstances, and amid the plaudits of the people. There was no friction, and the greatest good-will prevailed, and in fact our army officers and enlisted men, who have had much hard work and intricate problems in performing the various civil duties, issuing relief supplies and maintaining order, viewed the change with as much pleasure as the most enthusiastic native desiring self-government.

All agree that the military government has been successful under the most trying conditions, and the work has been done carefully, conscientiously, thoroughly, and effectively, and has set a high standard the world over as a firm, effective, and mild military government. The inauguration of Governor Allen was carried out under the direction of the department commander, General Davis, who has continued in every way possible his interest and efforts to uphold and assist the civil authorities and make the civil government successful.

The native Porto Rican viewed and regarded the change from military to civil government with the greatest indifference, and I was at a loss at first to understand the reason, in view of the fact that it had been so urgently represented to the people of the United States and to Congress that the people of Porto Rico were clamoring for civil government. Their indifference was unmistakably evidence that they appreciated the simple, and mild, yet effective military government of the Americans; that they had begun to love it as giving them all the liberty they desired, and could not appreciate, or had no time for, a change that meant little to them beyond a change in name.

It would be a neglect of my duty if I did not state in closing that the work of the officers and enlisted men of the United States Army, stationed in Porto Rico, in the establishing and carrying out of a military government, the maintenance of law and order, and the establishing of a civil government in Porto Rico has been hard, constant, and exacting. During the past year the officers and soldiers have been called upon to perform more constant and onerous duties than ever before, and the response at all times to the calls of the commanding general of the department or to the local conditions as they arose have been prompt, vigorous, and cheerful, and best illustrates the desire of the American soldier to aid the people of Porto Rico all that lay within their power to improve the conditions of our new acquisition of territory.

### DRY DOCK AT SAN JUAN, P. R.

On this subject Lieut. Col. R. B. Harrrison, inspector-general, U. S. Volunteers, reports:

A dry dock, either built by the War or Navy Department, or jointly built, is most urgently needed in the harbor of San Juan. It is not only needed from a naval and military standpoint, but also to give the many steamers touching at this port the necessary facilities for being cleaned and repaired.

### SPECIAL HEALTH IN PORTO RICO.

Among the results accomplished and the work done by the Army in one of our insular possessions may be noted the connection of the Medical Department in Porto Rico with the superior board of health and the board of charities of this island. It is learned from a pamphlet published by Maj. John Van R. Hoff, chief surgeon, Department of Porto Rico, that during active operations of about six months, in addition to formulating a code of sanitary regulations, prescribing a State examination, and licensing all physicians, dentists, pharmacists, nurses, etc., founding a laboratory for examination of food adulterations, it has organized a vaccine station for the production of vaccine virus, and carried to a successful conclusion the work of vaccinating the entire population.

The following figures recapitulate the work:

| | |
|---|---|
| Number of vaccinations | 742,062 |
| Number of revaccinations | 116,955 |
| Number of charged points produced | 1,024,395 |
| Number of cattle vaccinated | 1,201 |
| Total cost of vaccine production | $24,682.23 |
| Total cost of vaccinating | 18,422.44 |
| Total | 43,104.67 |

The immediate result of this immense labor is said to have crushed out an epidemic of smallpox which was threatening all quarters of the island. The beginning of this work was referred to in my report of a tour of inspection in 1899.

War and pestilence having been successfully met by this energetic board, their attention was turned to the famine which came with the hurricane of August 8, 1899. The recapitulation of the work of the board of charities from September 16, 1899, to January 22, 1900, may be summed up as follows:

| | | |
|---|---|---|
| Average number of people fed each day | | 182,915 |
| Total amount of food issued | pounds | 19,336,839 |

Most of the food was supplied by the Government, and the total cost of the relief work will be something over $1,000,000 expended in food and transportation, with practically no expense for personnel.

Physical examination.

It might be well to adopt the German practice where the entire body of every man is inspected every thirty days by a company officer and a medical officer, careful search being made for any heart lesions, hernia, venereal disorders, skin diseases, eczemas, etc. This is in order that any physical defect may be carefully noted, cared for, and reported that might be concealed by clothing or the improper modesty or willfulness of the enlisted men. Their method of identification of the dead upon the battle field is commended. A descriptive list, written upon parchment with indelible ink, is sewn inside the inner pocket of the coatee, so that each man carries with him his own descriptive list, which can not be destroyed in any way except by fire.

Epidermic annoyances.

Among the minor troubles of tropical service one may hardly hear of prickly heat or Dhobie's itch; and those who serve only elsewhere may easily ignore them. But as some amelioration, if not preventive, of these annoyances was needed, request was made that those serving there might be allowed, under the law of July 28, 1866, to purchase from the public stores such articles as cuticura or Packer's tar or other antiseptic soap, and Mennen's borated talcum toilet powder. Otherwise such articles may not be at all accessible at the out-of-the-way places troops are now stationed in the Tropics, even where steam transportation is used. These items may be interesting as illustrating changed conditions nor be regarded by the natives as essential. The law most considerately authorizes the soldier wherever stationed to buy from the Government with his own money what he needs, so that all, everywhere the Government sends them, are treated fairly alike; and doubtless the administration of the law will continue in a spirit as generous as the law itself.[1]

### A NATIONAL MEMORIAL.

As the centennial in commemoration of the transfer of the National Government to the District of Columbia is approaching, it may be appropriate to invite attention to the lack of adequate artistic outdoor memorials in the national capital of any of those men who did most to establish, preserve, and maintain our country and liberties, except men on horseback, which of course does not indicate a lack of appreciation. The beginning of a new century would seem a fitting time to recognize such distinguished public services, in a manner fittingly commemorative of our country's history in the nineteenth century; and it has been suggested that a memorial arch flanked by a court of honor, would be a suitable form for such a national and imposing work of art, naturally adding to the attractiveness and dignity of the architectural and historical features of our national capital, which now lacks such a feature, though it is familiar in foreign capitals. Some recognition seems also due the heroes of the eighteenth century, who laid the foundation of this great republic; and their last resting place and the battle fields where they fought for independence deserve to be as carefully preserved and legally guarded as those of any other of our wars.

### ANNUAL REPORTS.

The edition of the annual reports of chiefs of bureaus authorized to be printed was limited in 1894 to 1,000 copies. This number is hardly sufficient to meet the many demands for the annual reports of the Inspector-General, the supply of some years being entirely exhausted and of others very low; and it is respectfully recommended that an increase be authorized while there are volunteers in the service. Interest in military affairs has greatly increased in recent years, and an increased demand for these publications is sure to follow. The principal expense in publishing them is attached to the setting up of the type and other preliminary work, and the cost of running off 500 or 1,000 additional copies is extremely small and amply compensated for by a wider distribution, and consequently the better appreciation of the military situation.

### CLERICAL FORCE.

In concluding this report, it affords me special pleasure to invite attention to the faithful, efficient, and satisfactory service rendered by the clerks of this department and bureau. Much of their work requires unceasing application and special ability, with constant watchfulness and prevision, as it relates to all other departments, and frequently it demands extra hours, which are habitually cheerfully given. This work, though so diligently performed, is so quietly done that the aid it gives to economy and regularity and efficiency throughout the service may be depreciated. But some recognition is due them and it is sincerely hoped that the increase submitted in the annual estimate will be granted in order that these deserving clerks may receive some advancement and substantial encouragement for continued good work. The work of some of them has been specially meritorious and beneficial.

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[1] SEC. 25. *And be it further enacted*, That the office of sutler in the Army and at military posts is hereby abolished, and the Subsistence Department is hereby authorized and required to furnish such articles as may from time to time be designated by the inspectors-general of the Army, and the same to be sold to officers and enlisted men at cost prices; and if not paid for when purchased, a true account thereof shall be kept, and the amount due the Government shall be deducted by the Paymaster at the payment next following such purchase: Provided, That this section shall not go into effect until the first day of July, eighteen hundred and sixty-seven.—(Act of Congress approved July 28, 1866.)

Retirement of clerks.

Many of these valuable public servants have devoted their best years to the public service, and some consideration seems due them when years of constant and faithful application to their work have rendered them helpless and dependent upon others. Their pay is hardly sufficient to acquire a competence in old age, and the deserving can not always be promoted for lack of opportunity. It is believed that the public service would be greatly improved if a small increase were granted deserving clerks every five years, or if they could be retired on some such plan as was proposed in House bill No. 15 of the Fifty-sixth Congress, which contemplated the creation of a retirement fund without expense to the Government. In Europe some of the nations maintain a civil retirement list at their own expense, and in this country some of the more progressive corporations have found it advantageous to adopt similar systems. Surely when the efficiency of the service can be increased by such a considerate plan, and that without expense to the Government, it should receive fair and favorable attention.

Respectfully submitted.

J. C. BRECKINRIDGE,
*Inspector-General.*

The SECRETARY OF WAR.

# APPENDIX A.

## INSPECTIONS UNDER ARMY REGULATIONS 867, 868.

Preamble. A few details, even if tedious, shown during the year's examinations, are presented. It may be stated that these are taken from a dozen different inspecting officers, and the personal equation may in this way be nearly eliminated. But may it not also indicate that the general inspection simply covered the general work of the War Department? Routine reports may appear dull and uninteresting and not adequately indicate the vast change that has occurred in the duties and personnel and stores at the depots, arsenals, hospitals, etc., within this Administration. It has been almost revolutionary, though the vast change in the character, quantities, and demands have been met so quietly and at the same old places that the changes hardly attract much attention or make much impression. Even a comparison of the status then and now might require some effort to submit, and then hardly present a clear conception of the transformation from the time that the only separate hospital was that at Hot Springs, and khaki was not adopted, and transportation was within the continent and the mules were being sold and cost much less, and the Tropics presented no problem to us for we were not in it. How the walls have been spread and the hours been crowded and the multifarious new demands been faithfully, intelligently, patriotically, and adequately met under our old and well-tried system and experience and admirable personnel deserves fairer recognition while the increased volume of business is being honestly and rightly conducted at the same old stand. Though great improvements in many details had already been effected in stores by the influence of such officers as General Holabird, and in the personnel by such as General Kelton; and the militia and National Guard were never so good in a rather sedentary way, though armed with an obsolete weapon; and the individual regular and units of organization were never so well selected, nor better trained, nor possessed of sterner and truer military experience and traditions; still mobilization was wholly unpracticed then, and the handling of men in masses over wide areas, which is the soul of all military operations and the principal feature of European armies and modern military development, was for lack of appropriations becoming a decadent art here.

We were very fortunate in having a considerable number of men experienced in the large events of the civil war. But now matters are reversed, and all the concomitants of war are well provided, and only the expense needs scrutiny. Movements by brigade are familiar and those by division have been attempted, and supplies are abundant and improved, and mules are being purchased; but the old perfect training of the individual soldier and the units of organization need attention, and after two years of semi-war we seem little, if any, nearer to the essential military experience of practice with army corps than before. The principal excellence of an experienced soldier is the familiarity and power of working together most efficiently in masses, and individually this in its simplest elements is the ability to overcome natural obstacles and to take care of himself and the enemy. We ought not to desire our soldiers to be deprived during their advanced preparation of the opportunity for this essential experience and the qualities demanded for the best service in the exigencies of war. Experience has again demonstrated that supplies in the principal essentials for about a quarter of a million of soldiers must be in sight and readily accessible, or the citizen soldiers when called to the colors must suffer unnecessarily at first. In war the question in this matter becomes, Is it better to cost dollars or lives? At times it may seem easier or cheaper to deny or reject than meet this question fairly.

Depots.

The reports of inspection of the depots indicate that the administration of the affairs of these establishments are in the hands of capable, zealous officials, whose management of the business has usually been above reproach and entitled to praise. The steps taken for the protection of property and supplies against fire and theft have generally been reported adequate and satisfactory. This, for fire, consists of steam fire engines, hose, hose reels, steam fire pumps, and fire plugs supplied with water under pressure; and in the case of theft, protection is afforded by guards and watchmen. The buildings, office rooms, and storerooms are generally reported in good condition, suitable, satisfactory, and well arranged. Some minor repairs are required, and ventilation is not satisfactory in all cases. And a constant effort is evident to bring matters to the best attainable condition. At New York the inspector reiterates the recommendation of the previous year in regard to the desirability of constructing warehouses on Governors Island, on account of the large amount of rent paid by the Government for buildings in the city of New York, and states that since the last annual inspection this amount has increased more than $10,000. Storehouses do not have sufficient storage capacity in all cases, and some overcrowding is reported.

In this connection, Lieut. Col. C. H. Heyl, in his report of the last inspection of the quartermaster's depot at Philadelphia, Pa., says:

> Attention is again invited to the fact that articles are sent to this arsenal from military posts which can not be reissued because too much worn or of an obsolete pattern. It would seem to be economy, if they can not be used at the place from which sent, to sell them there and save the expense of transportation. No property should be sent to this arsenal which can not be reissued under an original requisition for supplies.

The required books and records are reported on hand and habitually properly kept. The means of transportation, where required, are generally reported satisfactory, sufficient, and in good condition. Hauling, other than that done by the depot teams, is performed under contract, usually at a stated charge per hundredweight, the rate being regulated by the distance of the haul. The water supply is generally reported satisfactory and sufficient.

The furnishing of supplies to the troops has entailed a great amount of labor upon the depots, especially a large increase in the matter of transportation of passengers, animals, freight, and funds, as well as large additions to construction, purchase, and handling of stores, as compared with the previous year. Nine thousand and ninety-nine

Christmas packages alone were received and shipped at the San Francisco depot.

The number of civilian employees on duty at the several depots is reported sufficient for the proper transaction of the public business, and could not well be reduced without detriment to the service. In some cases, it is reported that the employees have been compelled to work late at night and on Sundays and holidays.

The location of depots is generally reported desirable and convenient, and their affairs in good condition. The buildings are reported in good repair, well adapted to the purpose for which used, and in good police. Electric lights in the Army Building, New York City, are reported needed. Purchases, at least of subsistence, are reported made, as far as practicable, direct from first hands, and they appear to be conducted in accordance with law and regulations. Purchasing commissaries inspect all stores purchased, if practicable, and articles are required to be in accordance with the contract and samples furnished. Subsistence storehouses are generally reported good and sufficient, and the stores properly classified and neatly arranged. The price paid for subsistence stores is reported to compare favorably with the wholesale rates ruling at the time of purchase.

The officers in charge of the medical supply depots seem to possess the necessary executive ability, and are reported as displaying excellent judgment in the performance of their varied duties. The inspector, in his report of inspection of the medical supply depot, San Francisco, Cal., recommends "that a suitable building to accommodate the medical supply depot be rented, and that its offices and storerooms be thus brought together." Promptness appears to have been the rule in furnishing supplies for the troops.

The number of civilian employees on duty at the medical depots range from 26 to 13, and their salaries from $150 to $55 per month.

The medical supply depot, Manila, P. I., was inspected for the first time by an officer of the Inspector-General's Department, on May 23, 1900, by Maj. S. C. Mills, inspector-general. A summary, somewhat in detail, of his report may be of interest.

The depot was established September 28, 1898. At date of inspection it was in charge of 1 surgeon, who was assisted by 1 acting assistant surgeon; and the enlisted force consisted of 1 hospital steward, 3 acting hospital stewards, and 6 hospital corps privates. There were also 4 civilian employees engaged on clerical work, and 6 Chinos and 1 native employed as packers.

The depot is located in the Paco district and adjoins the First Reserve Hospital. There are six buildings which are owned by the Government, one of which is used for offices and the remaining five for storerooms. They were reported in good condition, and protected from theft by sentinels, locks, and bars. For protection from fire, dependence is on the city fire force, which is not considered satisfactory. The storehouses are reported insufficient for the depot needs, and one of them is separated from the others by fully half a mile. The inspector recommends that the stewards' quarters, which are of no particular use, be torn down and the land around them cleared, so as to give an increased river frontage and room for the erection of three storehouses. This would permit of the abandonment of the storehouse at a distance and result in the following advantages, viz:

"Sufficient room, the buildings close together so they could be easily protected, and increased river frontage."

This depot supplies medicines and hospital supplies to the entire archipelago, and pays such bills incidental to the service of the Medical Department as are authorized by the chief surgeon. Since July 1, 1899, to date of inspection, a matter of not quite eleven months, the following business was transacted:

| | | |
|---|---|---|
| Requisitions filled | | 1,500 |
| Vouchers paid | | 1,287 |
| Received on requisitions (about) | tons | 40,000 |
| Supplies received on purchase (about) | do | 25,000 |
| Supplies shipped (about) | do | 60,000 |
| Bills of lading issued | | 1,600 |

During the same period the amount paid for labor is reported as $83,812.20, and the amount paid for supplies $99,478.52, making a total of $183,290.72.

In the matter of transportation of stores from the United States the inspector calls attention to the difficulties experienced, resulting from the failure to supply bills of lading, or packers' lists, which makes an accurate and correct accountability for stores very irksome, and perhaps impossible. The loss of articles in shipment from the United States appears to be a factor of considerable importance. Among a list of such articles reported a few of the more valuable may be mentioned, as follows: Three hundred and seventy-six bottles of brandy, 413 bottles of whisky, 132 bottles of sherry wine, 100 colored quilts, 2 refrigerators, 2 field desks, 2,000 bottles of alcohol, 2,000 tins belladonna plasters, 7,308 bottles quinine sulph. tablets, 7,597 bottles lime chloride, 5,000 suspensory bandages, 2,920 first-aid packets, 10,056 cotton pillow cases, and 13,688 cotton sheets.

The inspector states that the time required to fill a requisition from the United States is about seven months, from start to finish. "With a few minor exceptions supplies have been satisfactory as to quality and condition." In regard to climatic effect, it is reported "that farinaceous substances quickly become infected with vermin and mold. Substances such as silver and potassium iodide quickly decompose. Instruments, hypodermic syringes, etc., need constant care. In the purchase of supplies it is noticed that coal-tar preparations are much cheaper here than at home. The quality of supplies purchased compares favorably with those furnished from home except that pills do not keep as well."

The inspector calls attention to the large number of bunks, field chests, mess chests, chairs, tables, mattresses, cases of instruments, and field and orderly pouches placed on inventory and inspection reports as worn-out in service, many of which are fit subjects for repair, which can not be done on account of the lack of facilities, and he recommends the establishment of repair shops at the depot.

Army and Navy General Hospital.

This institution was inspected November 11, 1899, by Maj. Frank D. Baldwin, acting inspector-general, Department of the Missouri. At date of inspection, the military personnel consisted of the officer commanding the hospital, 2 acting hospital stewards, and 15 enlisted men of the hospital corps; and the civilian force, consisting of superintendent of construction, clerk, messenger, engineer, mechanic, attendants, fireman, laborers, teamster, and matrons, footed up 15 in all. The buildings number 14, some of which are in need of repairs. Water pressure for fire purposes is reported insufficient, and increased steam power is needed.

The hospital provides 15 beds for officers and 60 for enlisted men, and at date of inspection the number of patients was 47; or the well were about two-thirds as many as the sick. The hospital and premises were reported in excellent police, and the supplies of good quality and sufficient for present needs.

General Hospital, San Francisco, Cal. Inspected January 16, 1900, by Lieut. Col. Marion P. Maus, inspector-general, Department of California. At date of inspection, the military personnel consisted of 1 surgeon commanding, 1 assistant quartermaster and commissary, 3 assistant surgeons, 6 acting assistant surgeons, 4 hospital stewards, and 122 hospital corps privates. There were 14 civilian clerks, cooks, laborers, etc., and 39 contract female nurses. The inspector states:

> The personnel of the hospital has been fixed by the Surgeon-General as a commanding officer, executive officer, pathologist, and 10 medical officers for ward and other duty. This number appears to be sufficient, but has never been kept fully supplied on account of the great need of medical officers in the Philippines.
>
> The number of hospital corps men on duty here has varied from 100 to 130, the variations being due to transfer to the Philippines, discharges for disability, or expiration of term of service.
>
> There have been, on an average, 45 female contract nurses at the hospital under the supervision of Mrs. Isabelle E. Cowan, chief nurse. They are reported to have done excellent service and to be a necessity in a permanent hospital like this.

The organization of this hospital dates from December 1, 1898, being a continuation of a general division hospital. The original plans contemplated a hospital building to accommodate 400 patients. As constructed it consists of an administration building, and separate buildings for wards and for male and female nurses. Four of the old wooden barracks and two vacant sets of brick barracks at the Presidio have also been utilized for hospital purposes during the greatest demand.

The 10 wards in the hospital proper will accommodate 388 sick, and the 16 wards in the brick barracks 239 sick, giving a total capacity at date of inspection of 627 patients. The inspector reports that the present capacity is not adequate, that the hospital should be largely increased, and suggests in connection therewith the advisability of selecting a more desirable climate on the Pacific coast for its location, where the climatic conditions were less changeable and cold winds and heavy fogs would not be encountered by invalids fresh from a tropical country.

The number of patients admitted to the hospital during the year is reported as 4,722. They were treated principally for rheumatism, chronic diarrhea, and dysentery originating in the Tropics.

In regard to the general condition of the hospital, the inspector states:

> A careful inspection was made of the hospital in every department. The quartermaster and commissary accounts were carefully verified, and the general conditions as to cleanliness, etc., were observed. The police of the hospital was in every way satisfactory. The ward rooms, beds, dining, mess, and recreation rooms, kitchens, bath rooms, lavatories, etc., were all in excellent condition. The operating rooms, instruments, and supplies were reported complete, and appeared to be in good, serviceable condition in every respect.
>
> The general police of the grounds was as good as could be expected, as improvements were then being carried on and the roads were in bad condition and rendered worse by the recent rains.

First Reserve Hospital, Manila, P. I. This hospital, which had not been previously inspected, was inspected January 25, 1900, by Lieut. Col. E. A. Garlington, inspector-general. At date of inspection the hospital personnel, both military and civil, consisted of 3 commissioned officers, 11 acting assistant surgeons, 6 hospital stewards, 3 acting stewards, 180 privates, 56 females nurses, 24 Chinos, and 98 Filipinos. The Chinos are employed as cooks, bakers, carpenters, and masons, and the maximum rate of pay reported is $70 per month (Mexican currency) for a chief cook. The general average for the Chinos is about $40 per month. The Filipinos are classed as laborers and receive usually $12 per month (Mexican currency). The inspector reports as follows in regard to the location of hospital, buildings, etc.:

This hospital is situated outside the walled city on a plat of ground bounded on the south by Calle Concepcion; on the west by Calle Rosero; on the north by private property; on the east by the depot of the medical purveyor.

The hospital proper, permanent buildings, was constructed as such by the Spanish authorities, and, for this part of the world, I take it to be well adapted for the purpose to the extent of about 300 beds. The capacity was increased by the United States by employing hospital tents. One hundred and fourteen tents are used for ward purposes. There is one ward within the grounds proper of the hospital; the mump and measle ward is within the grounds of the purveyor's depot and the other tent wards are located on a lot across Calle Rosero and are grouped around a building used as a storeroom by the medical purveyor and the Signal Service. In this same lot are 29 hospital tents used as quarters for the Hospital Corps. In the yard of the medical purveyor, immediately in rear of the hospital kitchen, there are 21 tents used for messing purposes by men able to leave the wards and the Hospital Corps. All the tents are floored except the last mentioned and those used for the casual Hospital Corps men; only a very few are framed. The floors are about 1 foot above the ground.

The hospital has 22 distinct wards with a capacity of 70 beds each, each tent having 5 beds; there are 4 attendants during the day and 1 at night to each ward. The tour of duty for a nurse is twelve hours. Each surgeon has 3 wards under his supervision; they are always on duty. One surgeon is detailed as officer of the day, is provided with an office where he must remain when not absent on duty; when so absent his orderly remains at the office.

Each patient is provided with pajamas and the uniform; those leaving the ward for meals are required to wear uniform. Wire-bottom bunks, mattresses, and mosquito bars are provided.

At date of inspection there were 1,039 patients in the hospital. These were being treated principally for malarial fever, intestinal disorders, venereal diseases, typhoid fever, and quite a number for wounds and injuries. The hospital is provided with an isolation ward and with a morgue or dead house. The following are sample bills of fare of both heavy and light diet:

### LIGHT DIET KITCHEN.

*January 25, 1900.*

*Breakfast.*—Corn meal mush, with cream; hot milk, eggs, coffee, toast, chocolate.
*Dinner.*—Escalloped oysters, toast, tea, hot milk, eggs, tomato soup.
*For specials:* Wine jelly, mutton chops, corn starch pudding, chicken custard.
*Supper.*—Boiled rice, with cream; toast, tea, hot milk, eggs, macaroni soup.
*Liquids.*—Beef broth at 9 a. m.; eggnog at 2 p. m.

### HEAVY DIET.

Roast mutton, gravy, sweet rice, milk, boiled potatoes, green peas, bread, butter, sugar, chocolate.

*Supper.*—Roast mutton, gravy, baked potatoes, macaroni and tomatoes, stewed prunes, bread, butter, tea.

*Breakfast.*—Stewed mutton with green peas, fried potatoes, rolled oats and milk, bread, butter, peaches, coffee.

### HEAVY DIET.

*January 23, 1900.*

Fried bacon, baked potatoes, fried corn meal mush with sirup, coffee, bread.

*Dinner.*—Fried chicken and gravy, mashed potatoes with milk and butter, boiled rice and milk (sweetened), cacao, bread and butter.

*Supper.*—Boiled eggs, stewed beans and puree, baked potatoes, stewed prunes, tea, butter and bread.

### LIGHT DIET KITCHEN.

*January 23, 1900.*

*Breakfast.*—Corn meal mush with cream, coffee, chocolate, toast, milk, eggs.

*Dinner.*—Mock turtle soup, toast, ground beef, gravy, baked Irish potatoes, tea, milk, eggs, chicken, chicken broth.

*Supper.*—Cream tomato soup, boiled rice with cream, soft boiled eggs, milk, tea, toast.

*Liquid diets.*—Beef broth at 9 a. m.; eggnog at 2 p. m.

The inspector reports the dispensary in good order and condition and amply provided; that the operating rooms are in good condition, and all needed instruments, etc., are on hand. There is a well-equipped chemical and bacteriological laboratory. The female nurses are reported to be very satisfactory in every respect.

Second Reserve Hospital, Manila, P.I.

This hospital was inspected January 15, 1900, by Maj. S. C. Mills, inspector-general, this being its first inspection by an officer of the Inspector-General's Department. It was established on October 3, 1898, as a convalescent hospital, and shortly afterwards was given its present designation. It occupies the building known as El Colegio de la Asuncion, which was built as a school for girls.

The building is two stories high, with wide porches, high ceilings, good floors, and has considerable open ground about it. It lends itself well to hospital purposes. There are outbuildings which are used as stables, cow sheds, storerooms, dead house, and rooms for native servants.

The commissioned personnel at date of inspection consisted of 1 surgeon, 1 assistant surgeon, and 4 acting assistant surgeons. There were 26 civilian employees used as cooks, assistants to cooks, and for policing the grounds and buildings and care of cows. The patients present numbered 289. Since the organization of the hospital, the total number of cases treated is reported as 5,646, of whom 3,435 were regulars and 2,211 volunteers.

The following are a few extracts from Major Mill's report:

The black belt worn with white uniform is unsightly. In this climate the white canvas shoe is the best foot gear for indoor work. The men of the Hospital Corps prefer them for ward duty, and most of the men have purchased such shoes. As the white uniform is regulation for the Hospital Corps, it should be made complete, and white canvas belts and white canvas shoes of a uniform pattern be issued.

The grounds and outbuildings are well cared for, and were in a fine state of police when inspected.

The hospital as a whole was clean and in a good state of police.

There are ten bath rooms with tile tubs in the building, all of them in good condition.

The dispensary is in good condition and has a full complement of stores on hand. All requisitions are promptly filled by the medical purveyor at Manila.

The operating room is in good condition and fully equipped with instruments and fittings.

The books are correctly and neatly kept.

The female nurses at this hospital are not Government nurses. They are supplied from Auxiliary No. 3 of the Red Cross Association. The nurses are paid, fed, and housed by the association, and are under charge of a head nurse. They are under a six-months' contract which expires in March, when they expect to return to the United States. The commanding officer reports their character and work as excellent. The commanding officer reports the character, habits, and efficiency of his assistants as excellent in every respect.

Supplementary Wards Hospital, Manila, P. I.

Inspected January 18, 1900, by Maj. S. C. Mills, inspector-general, this being its first inspection by an officer of the Inspector-General's Department. The supplementary wards were established on May 18, 1899, for the purpose of providing a place for convalescent patients from the First and Second Reserve Hospitals, which were overcrowded. It was not considered an independent hospital, but as detached wards of the other hospitals. As to location, etc., the inspector states:

> The hospital occupies the building and grounds on the Paseo de Aguadas, known as Cuartel de Infanteria, No 73. This is owned by the United States Government. It covers a space of about 400 by 300 feet, and is well adapted for hospital purposes. There are 5 wards, providing 263 beds. In the arrangements for beds, 56 square feet floor space is allowed to each bed. The buildings are dry, well ventilated, and at time of inspection were immaculately clean.

At date of inspection there were present 1 assistant surgeon and 4 acting assistant surgeons. The patients numbered 244, a majority of whom were receiving treatment for malaria, intestinal troubles, and typhoid fever. Thirty-nine of them were reported as surgical patients.

The following extracts from the inspector's report may be of interest:

> I inspected the hospital-corps men in ranks, the men being taken from their work without warning. They wore white uniforms, campaign hats, and white shoes. The men presented a good appearance. They were drilled in the ordinary movements by fours and in line, and afterwards in litter drill. The drill was good and shows a well-instructed command. There is a great lack of uniformity in the white uniform—three styles of blouses were worn. The commanding officer says it has been impossible to procure a uniform issue of white clothes. The white shoes worn were purchased by the men.
>
> The diet kitchen is in good condition and is well supplied.
>
> The cooking, serving, and quality of food is good, the quantity ample, and the variety is as great as is possible under existing conditions.
>
> The system for reporting, issuing, and overseeing the light diet or special diet is extremely well arranged in all its details. The food of the sick is inspected by the commanding officer each day, by the ward surgeons twice a day, and by officer of day at each meal. All complaints are entered on the officer of day's report. There is an oil stove in each ward for the preparation of food for patients at night.
>
> All requisitions are promptly filled by quartermaster department, subsistence department, and medical purveyor.
>
> The appearance and capability of stewards and hospital-corps men are good.
>
> The commanding officer reports the character and ability of his assistants as very good.

Convalescent Hospital, Corregidor Island, P. I.

This hospital was inspected on February 14, 1900, by Maj. S. C. Mills, inspector-general. It had not been previously inspected by an officer of the Inspector-General's Department. The hospital was established December 21, 1898, and as to location, etc., the inspector states:

> Corregidor Island is at the entrance to the bay of Manila, and is 28 miles from the city. Connection with it is by quartermaster's department boat *New Orleans*, which makes the round trip to Mariveles each day, stopping at the hospital landing en route.
>
> The hospital is established near the Pueblo de San Jose, a village of five or six hundred inhabitants. The site was used by the Spaniards as a naval station, and in establishing the hospital the Spanish buildings were used so far as practicable. The site is an excellent one for a convalescent hospital. It is cooler and has a more bracing air than the city, and patients can be given liberty without being exposed to the temptations of the city.

Most of the buildings of the hospital are located not far from the bay, along the arc of a circle. The officers' ward is situated on the top of a ridge about 100 feet above the rest of the hospital.

The buildings in which the wards are located were constructed for this purpose. They are wood, with corrugated iron roofs, have verandas on all sides, and are very satisfactory. The wards are: Wards 1 and 2, building "A," 50 beds each; building "B," 1 ward, 20 beds; building "C," wards 1 and 2, 40 beds each; officers' ward, 20 beds. The buildings are dry and well ventilated by outside air entering through doors, windows, and cornice ventilators.

At date of inspection the commissioned personnel consisted of 1 surgeon and 2 acting assistant surgeons, and the attendants and patients footed up 50. As in the case of the other hospitals in and around Manila, the prevalent diseases are malaria, diarrhea, and dysentery. Twenty deaths have occurred at the hospital since the date of its establishment, of which one-half resulted from dysentery. The total number of cases treated is reported as 2,305, of whom 1,156 were regulars and 1,149 were volunteers.

The civilian employees numbered 23, and consisted of 2 Chinese cooks and 21 native Filipino laborers. One of the cooks was paid $25 and the other $15 per month (gold), and the Filipino laborers $10 per month (Mexican).

The following are a few extracts from Major Mills' report:

> I inspected the hospital-corps men in their quarters and at their work. They were neat, clean, attentive to duty, and gave every indication of being in a good state of discipline. Their quarters were in excellent condition.
>
> The grounds are policed by the native laborers and the hospital-corps men. The condition of police is excellent everywhere about the grounds. Drainage is provided for by surface ditches, which were clean and well-cared for.
>
> Patients in the officers' ward have their own mess, and there is a comfortable dining room and good kitchen in the officers' ward building. The officers' ward kitchen and dining room were neat and clean, and the food good and well served. Officer patients pay $1 per day, money going to the hospital fund. Civilian patients are taken with the authority of the chief surgeon, and pay 50 cents per day if in regular wards; those in officers' ward pay $1 per day.
>
> The food for the sick is inspected by the commanding officer each day, and by the officer of the day each meal.
>
> The dispensary is in good condition and is well supplied. The present operating room is not satisfactory, but another one is now being fitted up. The needed instruments are on hand.
>
> Requisitions are filled fairly promptly by the medical purveyor at Manila.
>
> The condition of discipline among patients is good. The native village occasionally presents temptation in the way of liquor or overstaying pass. When necessary enlisted patients are tried by summary court.
>
> The books and papers are in good condition.
>
> There is an abundant supply of litters.
>
> There is an officer of the day on duty for twenty-four hours at a time. Ward surgeons make two rounds per day, morning and evening, and visit special cases at such times as are necessary. The commanding officer reports the character and capacity of the assistant surgeons as satisfactory.
>
> The female nurses are regular contract nurses. They are on duty from 7.30 a. m. to 12.30 p. m., and from 2 to 5.30 p. m. Their character is reported good and services satisfactory.
>
> Hospital-corps men are on duty twelve hours at a time; a ward master and two men to each ward by day and two men to each ward by night.
>
> Arms and accouterments of enlisted patients are tagged, stored, and properly cared for. In the event of death, or transfer to the United States of patients, their company commanders are notified that arms and accouterments await their orders.

Armories and arsenals.

These have been inspected during the year, and all matters there are generally reported as in a particularly liberal and gratifying condition. Interest and care in the preservation of Government property is reported as manifested by commanding officers, who are habitually attentive and energetic in the performance of their duties. And obsolete old stores have seldom met with a more serious attempt to be gotten rid of in quantities. They certainly seemed excessive among stores kept on hand, and some of them may be instructive or interesting or decorative at military colleges, museums, or Grand Army posts.

The ordnance detachments are reported in excellent condition as to discipline, instruction, and efficiency, with fine arms and equipments, and properly and neatly uniformed. The men are reported to be conversant with their duties and attentive and energetic in the performance of them.

Quarters for both officers and enlisted men are reported ample and satisfactory, except at the Watertown Arsenal, Mass., where a new barrack building is reported as needed, as the quarters now occupied by the detachment "are very old, lacking in modern conveniences, and entirely too small for the number of men." With one exception, the bathing facilities are reported to be excellent. Guards are reported in satisfactory condition and well instructed.

The public buildings are generally reported in good repair and condition, except, oddly enough, those assigned for the care of the sick. This naturally indicates the exceptional circumstances and limited demand of these commands. The inspector reiterates the recommendation of the previous year that steps be taken to secure an appropriation for the construction of a small hospital at Columbia Arsenal, Tenn., and states:

> A suitable building for hospital purposes has been included in the annual estimates since 1893, ineffectually. There is no provision for the proper treatment or diet of sick men. I am reliably informed that some have been treated and operated upon in private houses in the town of Columbia, Tenn., some have lingered for weeks and months on the sick report in the crowded barrack rooms, and some have been sent away to other military posts to die soon after their arrival.

At the Indianapolis Arsenal, Ind., the usual adverse report is made in regard to accommodations for the sick. A portion of the barrack building there is used for hospital purposes, and the inspector states that "a separate small hospital building is badly needed, and has been estimated for annually since 1891." At the Rock Island Arsenal, Ill., also, the criticism as to buildings is confined to that of the hospital alone, and in connection with this the inspector states:

> The buildings are all in good condition, both as to repair and sanitation, except the hospital, which is an old frame building, utterly unfit for hospital purposes, and not worth repairing. The commanding officer states that an estimate for a new hospital has been submitted annually for the past twenty-five years, but no action has yet been taken by Congress.

Extensive repairs to the buildings at the San Antonio Arsenal, Tex., are reported needed. Some new buildings have been constructed during the year, and the usual repairs have been made. Magazines are reported dry, well ventilated, and in good condition generally.

The food is reported sufficient in quantity and properly prepared and served. The sanitary conditions are generally reported good, and the sewerage satisfactory. The required books and records are reported on hand and generally neatly and correctly kept.

The water supply is not reported adequate in all instances. The apparatus and appliances for extinguishing fires, consisting of steam fire engines, hose carts, hose, fire hydrants, fire buckets, fire extinguishers, and hook and ladder trucks, are reported ample, with two exceptions, and in good condition. The inspector concurs in the suggestion of the commanding officer of the New York Arsenal "that the establishment of a number of pools along the sea wall would be a wise precautionary measure." Ordnance detachments are reported organized for fire purposes, and are frequently exercised in the use of the fire apparatus.

The inspector reports a large quantity of old and obsolete stores on hand at the Benicia Arsenal, Cal., which he thinks it would be to the interest of the Government to sell or otherwise dispose of, as they simply encumber the storerooms and require care which might be dispensed with. A similar accumulation of stores is also reported on hand at the San Antonio Arsenal, Tex., which, the inspector states, are absolutely useless and without value, and should be destroyed.

The following extract from the report of inspection of the Rock Island Arsenal, Ill., as to improvements already made and contemplated there, may be of interest:

> Extensive improvements and developments are now in progress in the power plant and its transmission, and in the shop equipments at this arsenal. For many years power generated by turbines at the water-power dam has been transmitted a distance of 800 or 1,000 feet to the shops by means of wire ropes. This method, as installed, sufficed for the more limited operations of the arsenal as they had been conducted, but with the great call of the Spanish war and the rapid increase in the number of machines, the ropes were not capable of supplying to the shops the entire power required for their operation. Moreover, the turbines—but eight in number and of somewhat antiquated design, developing only about 40 horsepower each—did not generate the entire amount of power now required. To develop the capacities of the arsenal in this direction a change from the wire rope to electrical transmission of power is now in operation. The old turbines have been removed and fourteen, each of which will develop 100 horsepower, will shortly be installed on the Government dam. With these a complete outfit of the necessary shafting and two large 500 kilowatts generators, each providing about 750 horsepower, will be located on the dam and directly connected with the main shaft. On each of the principal lines of shafting in the shops motors are to be installed, so arranged that any one shaft can be operated as desired.
>
> The last Congress appropriated $350,000 for commencing the installation of a small-arms plant at the arsenal, to which the present Congress is adding $509,000 for its completion. Steps are now being taken to prepare three of the shops in the north, or Armory Row, for the reception of the necessary machinery and for the conveniences required for the occupancy of workmen. About $100,000 has already been expended or incurred on contracts for this object. As soon as the money appropriated by the present Congress is available specifications and proposals will be issued for the machinery required, and its installation will probably continue during the coming fall and winter. The plant will be arranged for a capacity of between 200 and 250 small arms per working day of eight hours. In case of emergency this number may be increased to 500 by working two shifts of men daily.
>
> With the ample power generated by the new turbines, the modern method of transmission and application to the point where required, with the development of the present plant for the varied manufactures of the arsenal, and with the addition of the great plant for making small arms, this arsenal, within the next year or so, should be able to fulfill the anticipations of its founders in being not only the great arsenal of the Mississippi Valley but of the entire country.

Sandy Hook proving ground.

The proving ground at Sandy Hook, N. J., was inspected April 23, 1900, by Maj. J. M. K. Davis, assistant to the inspector-general, Department of the East. At date of inspection the commissioned force on duty there consisted of 2 captains and 3 first lieutenants, all of the Ordnance Department, and the enlisted men numbered 66. A force of 84 civilians, consisting mostly of mechanics and laborers, were also on duty. The inspector calls attention to the need of new barracks, the old wooden barracks being badly adapted to the purpose, with porches, steps, and entrances in bad shape. He regards the occupancy of the second floor of a building for quarters by the civilian employees, the first floor of which is used for the storage of valuable ordnance material, as objectionable.

United States powder depots.

The United States powder depots, located one at Dover, N. J., and one at St. Louis, Mo., were inspected during the fiscal year. The locations are reported desirable, with ample facilities for shipping. The magazines, storehouses, offices, etc., are reported in excellent repair and condition, the former being dry and well ventilated. The stores on hand consisted of shot, shell, and powder. The stores fabricated, so far as reported, consisted of cartridges for field, siege, and seacoast guns, and cartridge bags. For use in case of fire, there are fire hydrants located throughout the grounds with hose conveniently placed.

Ordnance depot, Manila, P. I.

This depot was inspected June 11, 1900, by Maj. S. C. Mills, inspector-general. It had not been previously inspected by an officer of the Inspector-General's Department.

The depot is located at the Maestranza Arsenal, within the walled city and adjoining Fort Santiago. Its establishment dates from the Spanish régime, the Ordnance Department succeeding to the plant upon the occupation of the city by the United States forces.

At date of inspection the commissioned personnel consisted of 1 lieutenant-colonel, assisted by 1 captain and 1 first lieutenant, all of the Ordnance Department. The enlisted men on duty at the depot numbered 18, of whom 2 were of the noncommissioned staff, Ordnance Department, 2 artillery sergeants, 12 privates from the artillery, and 2 privates from the infantry arm. These men live with their company organizations in the city, there being no barracks. The civilian force numbered 110, and consists of 6 Americans, 61 Filipinos, and 43 Chinos. The former are employed in clerical capacities, the Filipinos on mechanical work, and the Chinos as laborers. The inspector reports that the paper work at the depot is enormous, owing to the large number of issues and receipts, and that the present clerical force is inadequate.

There are 11 buildings, designated as follows, viz: One set of officers' quarters, 1 building used for officers and the armory shops, 1 machine shop, 1 power plant, 1 artillery storehouse, and 6 storehouses. They are reported in a good state of repair.

The inspector states:

> As regards climatic deterioration, leather, which molds and rots easily, and iron and steel, which rust, are the articles most affected.
>
> Transportation service has been generally satisfactory. There have been some delays in arrivals of articles from the United States.
>
> The shops of the arsenal appear to be in good condition, and much work is done in repairing and refitting arms and equipments.
>
> The recent orders in regard to turning in worn rifles to be rebrowned, or otherwise put in shape, is satisfactory in its workings.

United States Penitentiary, Fort Leavenworth, Kans.

Inspected by Lieut. Col. Frank D. Baldwin, acting inspector-general, Department of the Missouri, August 3, 1899. At date of inspection there were 39 prisoners in confinement, 22 of whom came from the regulars, 15 from the volunteers, and 2 civilians—an employee of the quartermaster's department and a retainer. Among the offenses for which the prisoners were convicted and confined, murder heads the list, and 8 of them are serving life sentences for this crime, and one other has a term of ninety-nine years for the same offense. Eight were convicted for larceny and desertion, and the same number for assault. Five are serving sentences for manslaughter, the terms ranging from five to fifteen years. The shortest term noted is one year, for larceny.

The inspector reports that the behavior of the military prisoners compares favorably with that of any of the others, and that they are studious and make every effort to receive credit for good-time conduct. The prisoners are reported as looking well, and seem to be in good health and receive good treatment.

Apache prisoners of war.

The Apache prisoners of war at Fort Sill, Okla., were inspected in August, 1899, by Lieut. Col. Frank D. Baldwin, acting inspector-general Department of the Missouri. At date of inspection they numbered 279, as follows: Males, 130; females, 149. Of the males 66 are designated as men, and of the remainder 23 are over and 41 under 12 years of age. Of the females, 98 are classed as women, and of the remainder 6 are over and 45 under 12 years of age.

These Indians had quite a respectable herd of cattle on hand, numbering 1,898 in all. During a conversation between the inspector and the celebrated chief Geronimo the latter expressed anxiety about his children in Mexico, and said he would like to go back there. The inspector reports that he visited some of the camps of these Indians and found them all in houses, with indications of prosperity and improvement everywhere about their surroundings. He does not think that the old Indians will ever get over their yearning to return to their old country, but that the younger Indians seem to be well satisfied at Fort Sill, and that no one who knew of their condition before they went there and their present condition can advocate their being returned.

Prison at the Cuartel de España, Manila, P. I.

This prison was inspected in April, 1900, by Maj. S. C. Mills, inspector-general. As to its establishment and purpose the inspector states:

> This prison was established by the provost-marshal-general, and receives enlisted men arrested by the provost guard on charges which will bring them before general courts-martial, prisoners from the general hospitals, and from the Signal Corps. It receives from commands near the city some prisoners who are serving sentences or prisoners who are awaiting trial.

There were 80 prisoners at the inspection. Fifty-nine of these were awaiting trial, 19 were awaiting sentence, 1 had surrendered as a deserter, and the status of the remaining 1 was in question. The inspector calls attention to the fact that some of these prisoners had been in confinement for months awaiting trial. He questions whether men should be confined for five months before they are tried, and should have to wait seven months before knowing the result of their trials. It is reported that there are no facilities for working the prisoners, this being a guardhouse rather than a prison, and that it is not practicable to enforce the established rules of prison discipline. The requirements of Army Regulation 907 can not be observed.

The prison rooms were reported in good police, but crowded, the kitchen in good shape, and sinks in good condition and properly attended to. Facilities for bathing were good.

There is a hospital in connection with this prison, which, in addition to accommodating the sick at the Cuartel de España, receives sick prisoners from the military prison at Bilibid and also from the general hospitals. At date of inspection it was in charge of an assistant surgeon, assisted by 1 hospital steward and 12 hospital corps privates.

The hospital contains one ward with 14 beds, and at inspection there were 14 patients in hospital and 5 in quarters. The hospital was reported in excellent condition in every way.

Bilibid military prison.

The United States military prison, Bilibid, Manila, P. I., was inspected May 22–23, 1900, by Maj. S. C. Mills, inspector-general. This, under Spanish régime, was the general prison of the islands, and was continued under charge of the provost-marshal-general of Manila after the occupation of the city by the United States troops. General Orders, No. 26, Headquarters Department of the Pacific and Eighth Army Corps, dated October 31, 1898, directed that the building known as the women's ward of the Bilibid prison of Manila be set aside as a military prison for the confinement of all duly sentenced "general prisoners" of the command, and of all "garrison prisoners" belonging to military commands serving in Manila and sentenced for a term of two months or more.

At date of inspection there were 175 prisoners in confinement. Twenty-five of these were "general prisoners" and 150 "garrison prisoners." The number of prisoners handled at this institution from June 30, 1899—including the number in confinement on that date—up to May 22, 1900, the date of inspection, which covers a period of not quite eleven months, may be stated as follows:

BILIBID MILITARY PRISON.

*Number of prisoners handled from June 30, 1899, to May 22, 1900.*

| Gain. | Prisoners. | | Loss. | Prisoners. | |
|---|---|---|---|---|---|
| | General. | Garrison. | | General. | Garrison. |
| In confinement June 30, 1899 | 46 | 49 | Transferred to Department of California | 628 | ........ |
| Received since | 680 | 339 | Escaped | 1 | ........ |
| | | | Discharged and deported | 18 | ........ |
| | | | Released | 47 | 238 |
| | | | Transferred to garrison prison | 6 | ........ |
| | | | Transferred to Fort Leavenworth, Kans | 1 | ........ |
| Total | 726 | 388 | Total | 701 | 238 |

As will be observed, this shows a total of 1,114 prisoners handled for the period of about eleven months.

The terms for which sentenced of the general prisoners range from three months to life. One is sentenced for life, 2 for ten years, and the terms of the remaining 22 are five years or under, the majority being but for one year.

The prison was commanded by a major of infantry, assisted by a captain of United States Volunteers. Three sergeants from the provost guard are detailed for duty at the prison and used as overseers, and one enlisted man as a clerk.

The bathing facilities are reported good. Prisoners are required by orders to bathe twice a week. The sinks were in good condition, and the general police of the barracks and grounds was excellent. The food for prisoners is cooked and served by detailed prisoners. The mess corresponds to the ordinary company mess. The bread, which was fair, is baked at the prison, and the food was well cooked.

The only regular employment of the prisoners is confined to the policing of the buildings and grounds, which does not give enough work for them. The sergeants on duty drill the garrison prisoners three hours per day, Saturdays and Sundays excepted, in the school of the soldier, squad, and company, without arms.

There is a small hospital on the grounds of the Bilibid prison, which was reported in good condition and properly supplied for the treatment of emergency cases and slight cases of sickness for which removal to the regular prison hospital at the Cuartel de España is not necessary. In regard to the general condition, administration, etc., of the prison the inspector states:

> The general condition of the United States military prison at Bilibid is excellent. The administration conforms as closely as practicable to the established rules of prison discipline, and care, skill, and ability are shown in its management. It is, however, a makeshift, and has certain marked disadvantages. The most serious is that of lack of steady work for the prisoners; they are now having a much easier time, from a physical point of view, than the men who are doing duty. It can scarcely be said these men are confined at hard labor.
>
> The mixing of general and garrison prisoners is an evil. The soldier imprisoned for a military dereliction should not be thrown in contact with the men dishonorably discharged for crime. These conditions have been due to the exigencies of the service, but the question of a military prison, which shall be complete and properly equipped to provide the prisoners with work, is one which will require attention.

Recruiting.

Paragraph 825, Army Regulations, as amended by General Orders, No. 41, 1899, prohibiting the enlistment of certain classes of men, appears to be duly observed and strictly complied with. The recruiting rendezvous and 80 per cent of the recruiting stations have been inspected during the year. At the 53 recruiting stations from which reports have been received, there were on duty a total of 47 officers, divided among the three arms as follows: Cavalry, 10; artillery, 6, and infantry, 31. Some of these officers, in addition to performing the duties of their home stations, exercise general supervision over branch stations. The reports indicate that the officers in charge have performed their duties with zeal and energy. It is submitted that, if the law allows it, some of these stations might be filled by retired officers since active officers are so much needed elsewhere. The recruiting details are generally reported competent and efficient. In number they range from 1 to 10 enlisted men, with a general average of less than 4 per station.

The rooms occupied at stations range in number from 1 to 13, with rental charges—which usually include light, heat, and water—ranging from $15.50 per month for 1 room at Montgomery, Ala., to $160 per month for 11 rooms at one of the stations in New York City. The reports from 45 stations show the occupancy of a total of 228 rooms, with a total monthly rental charge of $2,427.33, or $29,127.96 per annum. This indicates an average per room per month of $10.65, or of $647.29 per annum, and $53.94 monthly rental per station. Locations are generally reported central and convenient, and the rooms desirable and satisfactory, with the single exception of the matter of bathing facilities, which are not adequate in all instances, though ample at some places.

Meals for recruiting parties and recruits are habitually furnished under contract at a stated rate per meal or per day. Dividing all the reported day rates by three and thus reducing them to meal rates, the reports indicate a maximum charge per meal of 25 cents and a minimum of 11 cents, with a general average for all the stations of

$21\frac{1}{24}$ cents per meal. The food is habitually reported good and sufficient. As this is habitual for the ration, it can be compared with the raw ration of the Army or Soldiers' Homes.

So far as reported there were 115,137 applications for enlistment. Of this number, 30,204 were accepted and 89,933 were rejected, which indicates that for every applicant accepted a little less than three were rejected. Among a variety of causes of rejection may be mentioned varicocele, impaired vision, intemperance, defective teeth, defective chest, eczema, minors, heart trouble, deafness, rupture, unsatisfactory character, under weight, under size, married, hemorrhoids, lack of education, and general unfitness. As to productiveness, the reports show 8 stations with 50 per cent or more of applicants accepted, as follows, viz: Station at No. 57 East one hundred and twenty-fifth street, New York City, 70 per cent; Dayton, Ohio, 68 per cent; St. Paul, Minn., 65 per cent; Chattanooga, Tenn., 63 per cent; Albany, N. Y., 55 per cent; Grand Rapids, Mich., 54 per cent; Cleveland, Ohio, 53 per cent, and Springfield, Ill., 50 per cent. At 6 stations the number of recruits accepted was 20 per cent or less of the number of applicants, the minimum being 12 per cent. The ratio of native to foreign born recruits is about as 5 to 1, or 84.5 and 15.5 per cent, respectively. This indicates an increase of foreign-born recruits as compared with last year, when the ratio was reported as about 8 to 1. Among the nations represented by the foreign-born recruits are Germany, Ireland, England, Canada, Norway, Sweden, Italy, Russia, Scotland, Austria, France, Denmark, and Finland.

In the matter of age, the reports show that of 26,491 recruits about 75 per cent or 19,776, were between 21 and 30 years of age, and of the remaining one-fourth, 3,953 were minors, 2,543 were between 30 and 40, and 219 were over 40 years old. The reports indicate that almost all occupations are represented by the accepted recruits, though about one-half of all those enlisted were either laborers, farmers, or soldiers, there being about twice as many of the former as of the latter two classes combined.

National cemeteries.

Under the biennial system of inspections, as prescribed in paragraph 867, Army Regulations, about 40 per cent of the national cemeteries were inspected during the fiscal year ended June 30, 1900. The reports show that the superintendents are zealous and energetic in the performance of their duties, and their efficiency and industry is indicated by the generally excellent condition of the roads, walks, drives, shrubbery, and grounds. The inclosures, consisting mostly of stone or brick walls, are generally reported in good condition. In a few cases it is stated that brick walls should be capped with cement in order to protect them from climatic conditions. At Corinth, Miss., the inspector calls attention to the condition of the main approach to the cemetery from the south, which presents anything but a satisfactory appearance. At Jefferson City, Mo., the inspector states that the cemetery fronts the principal driveway of the city, and that the stone wall should be replaced by a suitable and substantial iron fence, in order to permit a view of the beautiful grounds of the cemetery, which are now hidden by the stone wall. Adjoining this cemetery is the city cemetery, which is being improved and beautified by a very handsome fence. At Jefferson Barracks, Mo., it is reported that the cemetery proper is inclosed by a stone wall, but the entrance is inclosed by a board fence, which is unsightly and should be of iron. At Grafton, W. Va, the inspector, Lieut. Col. C. H. Heyl, states that—

> The small gate (3 feet 10 inches) at entrance on north side, which seems to have become the main entrance for the public, owing to its convenience and nearer proximity to the city, is too narrow and should be enlarged. Its present size is reported to be inadequate to meet the demands for passage of crowds on occasions of public gatherings.

The same officer, in his report on the national cemetery at Gettysburg, Pa., states that—

> The capacity of the lodge is said to be inadequate. The rooms are very small and an addition might be made without much expense, which would add much to the comfort and convenience of the occupants. The kitchen, being separated from the house, should be connected by a covered passage; this is especially desirable during winter months.

The graves are generally reported as properly sodded and the gravestones clean. Headstones are needed in a few instances—generally for recent interments. The water supply, which is derived from cisterns, wells, and city waterworks, is not reported adequate in all instances. Connection with the city waterworks is reported as needed and desirable at Grafton, W. Va., Jefferson City, Mo., Keokuk, Iowa, and Little Rock, Ark. At Memphis, Tenn., the inspector reports that the well goes nearly dry in summer, and that a small pumping engine and reservoir are needed.

## APPENDIX B.

### INSPECTION OF TRANSPORTS.

The following inspection of vessels of the army transport service were made by officers of the Inspector-General's Department during the past fiscal year:

| Name. | Where inspected. | Date of inspection. | By whom inspected. |
|---|---|---|---|
| Burnside | New York | Feb. 27, 1900 | Major Davis. |
| Do | Cuba | June 22-28, 1900 | Captain Foltz. |
| Kilpatrick | New York | Nov., 1899 | Major Davis. |
| Do | do | Mar. 10, 1900 | Do. |
| Meade | En route New York to Manila. | Nov. and Dec., 1899. | Major Mills. |
| Do | Manila | Jan. 9, 1900 | Lieutenant-Colonel Garlington. |
| Do | San Francisco | Mar. 16, 1900 | Lieutenant-Colonel Maus. |
| Do | Manila | Apr. 15-16, 1900 | Major West. |
| Newport | En route San Francisco to Manila. | Oct. 21 to Nov. 22, 1899. | Lieutenant-Colonel Garlington. |
| McClellan | En route Santiago to New York. | Nov. 25, 1899 | Lieutenant-Colonel Harrison. |
| Do | Brooklyn | Jan. 23, 1900 | Colonel Vroom. |
| Logan | do | Nov. 18, 1899 | Do. |
| Do | Manila | Jan. 9, 1900 | Major Mills. |
| Do | San Francisco | May 12, 1900 | Lieutenant-Colonel Maus. |
| Columbia | do | Nov. 29, 1899 | Do. |
| Dolny Vostock | do | do | Do. |
| Buford | New York | Jan. 30, 1900 | Major Davis. |
| McPherson | do | do | Do. |
| Do | En route New York to Porto Rico. | Apr., 1900 | Lieutenant-Colonel Harrison. |
| Sedgwick | New York | Feb. 2 and 9, 1900 | Major Davis. |
| Do | Havana | June 25, 1900 | Major Rolfe. |
| Sherman | En route San Francisco to Manila. | Sept. 23 to Oct. 21, 1899. | Major West. |
| Do | Manila | Jan. 11, 1900 | Do. |
| Do | San Francisco | May 12, 1900 | Lieutenant-Colonel Maus. |
| Garonne (horse ship) | Manila | Jan. 17, 1900 | Major Mills. |
| Flintshire (horse ship.) | do | Jan. 24, 1900 | Do. |
| Do | San Francisco | May 10, 1900 | Lieutenant-Colonel Maus. |
| Grant | Manila | Jan. 25-26, 1900 | Major Mills. |
| Do | do | Apr. 30, 1900 | Major West. |
| Do | San Francisco | June 29, 1900 | Lieutenant-Colonel Maus. |

| Name. | Where inspected. | Date of inspection. | By whom inspected. |
|---|---|---|---|
| Warren | Manila | Jan. 23, 1900 | Major West. |
| Do | ...do | Feb. 1, 1900 | Do. |
| Do | San Francisco | Apr. 30, 1900 | Lieutenant-Colonel Maus. |
| Victoria | Manila | Jan. 19, 1900 | Major West. |
| Hancock | ...do | Jan. 10-11, 1900 | Lieutenant-Colonel Garlington. |
| Do | San Francisco | Apr. 12, 1900 | Lieutenant-Colonel Maus. |
| Thomas | Manila | Mar. 28 to Apr. 2, 1900. | Lieutenant-Colonel Garlington. |
| Do | ...do | Apr. 15, 1900 | Major West. |
| Westminster (horse ship). | ...do | Feb. 8, 1900 | Major Mills. |
| Sumner | New York | Mar. 24-29, 1900 | Major Davis. |
| Do | Manila | May 26-28, 1900 | Major Mills. |
| Tartar | ...do | Feb. 10-11, 1900 | Do. |
| Wright | Cuba | Mar. 29-30, 1900 | Colonel Burton. |
| Do | Porto Rico | May 25, 1900 | Lieutenant-Colonel Harrison. |
| Athenian | Manila | Feb. 4, 1900 | Lieutenant-Colonel Garlington. |
| Do | ...do | Mar. 16, 1900 | Major West. |
| Sheridan | ...do | Feb. 21-26, 1900 | Lieutenant-Colonel Garlington. |
| Duke of Fife | ...do | Feb. 3, 1900 | Major West. |
| Pennsylvania | ...do | Feb. 27, 1900 | Do. |
| Do | ...do | May 19, 1900 | Do. |
| Relief (hospital ship) | ...do | Feb. 2, 3, 4, 1900 | Major Mills. |
| Aztec (horse ship) | ...do | Feb. 23, 1900 | Do. |
| Siam | San Francisco | Mar. 9, 1900 | Lieutenant-Colonel Maus. |
| Do | Manila | Mar. 28 to Apr. 2, 1900. | Lieutenant-Colonel Garlington. |
| Ingalls | Havana | Apr. 10, 1900 | Colonel Burton. |
| Port Albert (horse ship). | Manila | Mar. 17, 1900 | Major West. |
| Wyefield | ...do | Mar. 1, 1900 | Major Mills. |
| Conemaugh | ...do | Mar. 30, 1900 | Do. |
| Do | San Francisco | June 29, 1900 | Lieutenant-Colonel Maus. |
| Indiana | Manila | Mar. 31, 1900 | Major Mills. |
| Crook | Havana | June 25, 1900 | Major Rolfe. |
| Do | New York | Apr. 10, 1900 | Major Davis. |
| Do | San Juan, P. R | Apr. 18, 1900 | Major Sharpe. |
| Do | ...do | May 18, 1900 | Lieutenant-Colonel Harrison. |
| Rosecrans | San Francisco | Apr. 3, 1900 | Lieutenant-Colonel Maus. |
| Leelanaw (horse ship). | Manila | Apr. 5, 1900 | Major Mills. |
| Do | San Francisco | June 29, 1900 | Lieutenant-Colonel Maus. |
| Lennox (horse ship) | Manila | Apr. 19, 1900 | Major West. |
| Do | San Francisco | June 29, 1900 | Lieutenant-Colonel Maus. |
| Port Stephens (horse ship). | Manila | May 10, 1900 | Major West. |

From the reports submitted the following comparative data indicates in detail the condition of the vessels owned and chartered by the Government for the use of the Army transport service:

### UNITED STATES TRANSPORTS.

**Age.** Of the transports owned by the Government all were built in foreign countries except the hospital ships *Relief* and *Terry;* the oldest, the *Meade* and *Sedgwick*, being 26 years of age, followed by the *Hancock*, 21 years; *McPherson*, 20 years; *Burnside*, 18 years; *Crook*, 17 years; *McClellan*, 15 years; *Sumner*, 13 years; *Warren*, 11 years; *Buford* and *Kilpatrick*, 10 years; *Grant*, *Logan*, and *Sheridan*, 8 years; *Sherman*, 7 years; *Thomas*, 6 years, and *Relief*, 4 years of age.

**Cost.** The purchase price of the *Grant*, *Logan*, *Sheridan*, *Sherman*, and *Thomas* was $660,000 each; the *Hancock*, $600,000; *Meade*, $400,000; *Buford* and *Kilpatrick*, $350,000; *McPherson*, $250,000; *Crook*, $240,000; *Sedgwick* and *Warren*, $200,000; *McClellan*, $175,000; *Sumner*, $160,594, and *Burnside*, $125,000, a total of $6,350,594, and the cost of refitting and repairing these ships was $6,646,197.93, or a total expenditure of $12,996,791.93.

**Material.** The hulls are constructed of iron and steel, the *Grant*, *Sheridan*, *Sherman*, *Thomas*, *Warren*, *McClellan*, *McPherson*, *Buford*, and *Relief* being steel ships, and the *Logan*, *Meade*, *Burnside*, and *Hancock* have iron hulls.

Dimensions.

The longest of the transports is the *Meade*, her length being 488½ feet and her breadth 44 feet. Next comes the *Hancock*, 475 feet in length; *Sedgwick* and *Thomas*, 465 feet; *Sherman*, 452 feet; *Grant* and *Logan* 445; *Crook*, 435 feet; *McPherson*, 420 feet; *Warren*, 373 feet; *Buford* and *Kilpatrick*, 370 feet; *Sumner*, 361 feet; *McClellan*, 325 feet; *Relief*, 313 feet, and *Burnside*, 295 feet. The *Grant*, *Sherman*, *Sheridan*, and *Logan* have the same width of beam, 49 feet, the *Thomas* being the widest, 52 feet. The width of beam of the other ships is as follows: *Crook*, 47 feet; *Relief*, 46 feet; *Hancock*, 45.5 feet; *Kilpatrick*, 44.2 feet; *Sedgwick*, *Buford*, *Meade*, and *Warren*, 44 feet; *McPherson*, 39½ feet; *McClellan*, 38 feet, and *Burnside*, 36½ feet.

Tonnage.

The *Thomas* has the greatest tonnage, her gross tonnage being 6,000 and net tonnage 4,300. Next in order come the *Sherman*, whose gross tonnage is 5,780 and net tonnage 3,725; *Sheridan*, *Logan*, and *Grant*, 5,590 and 3,604, respectively; *Meade*, 5,560 and 3,072; *Hancock*, 5,305 and 3,356; *Sedgwick*, 4,770 and 2,923; *Crook*, 4,126 and 2,703; *Buford*, 3,721 and 2,383; *McPherson*, 3,699 and 2,277; *McClellan*, 3,500 and 1,827; *Sumner*, 3,458 and 2,182; *Relief*, 3,094 and 1,987; and *Burnside*, 2,194 and 1,405.

Draft.

The *Hancock* has the greatest draft loaded, 28.5 feet, her mean light draft being 19 feet. The *Sherman* has a mean draft loaded of 27 feet, and light 17 feet; the *Thomas* 26 feet 8 inches, and 15 feet, respectively; *Sedgwick*, 26 feet and 22 feet; *Logan*, 25½ feet and 18½ feet; *Sumner*, 24 feet and 20 feet; *Warren*, 24 feet and 18 feet; *Grant*, 23 feet and 15½ feet; *McClellan*, 22 feet and 17 feet; *McPherson*, 22 feet and 16½ feet; *Buford*, 21 feet and 15 feet; *Crook*, 21 feet and 14 feet; *Burnside*, 19 feet 5 inches and 15 feet 6 inches, and *Relief*, 17 feet 5 inches and 11 feet 6 inches.

Ballast.

Iron, water, and stone ballast are used on the different transports, the *Sherman*, *Burnside*, *McClellan*, *Buford*, and *Grant* using both iron and water ballast, and the *Grant* each of the three kinds named, while the *Logan*, *Thomas*, *Crook*, *McPherson*, *Sedgwick*, *Hancock*, and *Kilpatrick* use iron ballast only, and the *Sheridan*, *Sumner*, and *Relief* use water ballast.

Masts.

The masts of the *McClellan* are reported to be weak.

Sails.

The *Sherman*, *Sumner*, *Warren*, *Burnside*, *McClellan*, *McPherson*, *Sedgwick*, *Buford*, *Relief*, and *Hancock* are provided with sails, those on the *Hancock* being used for steadying purposes only.

Steering apparatus.

The steering apparatus on the various transports is reported as being in good order and sufficient, except that on the *McClellan* the steam-steering gear is reported as in poor condition, and on the *McPherson* as insufficient.

Armament.

The armament provided on the various transports is reported as follows: *Logan*, 4 rapid-fire guns; *Meade*, 4 6-pounders; *Sumner*, 3 6-pounders; *Thomas*, 2 6-pounders; *Hancock*, 4 6-pounders; and *Relief*, 50 rifles, caliber .30.

Fittings.

The gangways, companion ladders, towing hawsers, and anchors are reported as sufficient.

Chronometers and compasses.

The transports are reported as being properly supplied with chronometers and compasses, and one additional chronometer is said to be needed on the *Relief*.

Awnings.

The *Logan*, *Sherman*, *Thomas*, *Warren*, *Burnside*, *Crook*, *McPherson*, *Sedgwick*, *Grant*, *Hancock*, and *Kilpatrick* are supplied with full sets of awnings.

Cabins.

The number of cabins on the various transports and their reported capacity are as follows: *Logan*, 41, accommodating 90 first-class and 28 second-class passengers; *Sheridan*, 33, capacity 66; *Sherman*, 32, capacity 60; *Sumner*, 32, capacity 61; *Thomas*, 35 first-class and 13 second-class, capacity 69 first-class and 39 second-class passengers; *Warren*, 18, capacity 36; *Burnside*, 13, capacity 26; *Crook*, 29, capacity 82; *McClellan*, 4, capacity 8; *McPherson*, 32, capacity 74; *Sedgwick*, 35, capacity 63; *Buford*, 13, capacity 26; *Grant*, 34, capacity 71; *Hancock*, 26, capacity 52; *Kilpatrick*, 9, capacity 27.

Capacity for troops.

The reported capacity for troops on the different transports is as follows: *Sheridan*, 1,842; *Grant*, 1,800; *Sherman*, 1,717; *Thomas*, 1,653; *Logan*, 1,620; *Warren*, 1,242; *Meade*, 1,204; *Sedgwick*, 1,200; *Hancock*, 1,060; *Sumner*, 963; *Crook* and *Kilpatrick*, 800; *Buford*, 700; *McPherson*, 600; *Burnside*, 150; *McClellan*, 125; *Relief* (hospital ship), 250 patients.

On 7 of the transports—the *Burnside*, *Crook*, *McClellan*, *McPherson*, *Sedgwick*, *Buford*, and *Kilpatrick*—the troops sleep in hammocks; on 1—the *Thomas*—in bunks; and on 4—the *Logan*, *Sumner*, *Hancock*, and hospital ship *Relief*—in standees.

Life-saving apparatus.

The transports are provided with lifeboats, life rafts, life buoys, and life preservers, and generally with steam launches and other boats for use in emergencies. The total capacity of the boats and rafts is reported as follows: *Sumner*, 1,150; *Logan*, 750; *Sherman*, 670; *Grant*, 650; *Meade*, 625; *Hancock*, 562; *Warren*, 547, and *Relief*, 380.

The *Sheridan* carries the greatest number of life preservers, 2,400; the *Logan*, *Sherman*, and *Thomas*, 2,000 each; *Meade*, 1,940; *Sumner* and *Warren*, 1,500 each; *Sedgwick*, 1,406; *Hancock*, 1,242; *Crook*, 1,200; *McPherson*, 800; *Buford*, 725; *Kilpatrick*, 700; *Burnside*, 490; *Relief*, 400, and *McClellan*, 240.

Fire apparatus.

The means of extinguishing fire on shipboard are by the use of steam pumps, fire extinguishers, hand grenades, and fire buckets, and the transports are reported as well equipped for the purpose. The hose is also reported as sufficient in quantity and in good condition.

Water supply.

The supply of fresh water on the various transports is reported to be sufficient to last from ten to ninety days for the full complement of the vessels. The capacity of the tanks on the *Thomas* is 335,000 gallons; on the *Buford*, 203,000 gallons; on the *Crook* 163,000 gallons; *Sumner*, 109,000 gallons; *Meade*, 60,000 gallons; *Hancock*, 38,000 gallons; *McPherson*, 20,000 gallons; *Sedgwick*, 19,000 gallons; *McClellan*, 18,000 gallons; *Burnside*, 15,000 gallons; *Grant* and *Logan*, 1,200 tons. In addition to this supply the distilling apparatus on each ship is capable of supplying daily fresh water in the following quantities: *Thomas*, 15,000 gallons; *Logan* and *Sedgwick* 10,000 gallons; *Sumner*, 6,000 gallons; *Hancock*, 5,000 gallons; *McPherson*, 4,800 gallons; *McClellan*, 3,600 gallons; *Grant*, 3,000 gallons; *Relief*, 3,000 gallons; *Buford* and *Burnside*, 2,880 gallons; *Kilpatrick*, *Sheridan*, and *Warren*, 2,500 gallons; *Crook*, 2,000 gallons. The distilling apparatus on the *Warren* is reported as insufficient in capacity. Fresh water is carried as ballast on the following ships: *Sherman*, *Sheridan*, *Sumner*, *Logan*, and *Burnside*.

Engineer department.

Eleven of the transports have engines of the triple expansion type, two of the double expansion, and one is fitted with tandem compound engines. The greatest horsepower reported is that of the *Sedgwick*, 3,380, and the least the *Burnside*, 1,300. Ten of the ships have single screws, 5 twin screws, and one is propelled by a double screw.

The maximum and average speed of the transports are reported as follows: *Meade*, 15 and 13⅜ knots; *Hancock*, 15 and 13.2 knots; *Sedgwick*, 14 and 13.5 knots; *Buford*, 12¼ and 11 knots; *Burnside*, 12 and 11 knots; *Relief*, average speed 13 knots; *Warren*, 12.9 knots; *Sheridan*, 12.8 knots; *Grant*, 12 knots; *Logan*, 12 knots; *Sherman*, 11.51 knots; *Sumner*, 10½ knots.

The *Meade* consumes daily 121 tons of coal on the average; the *Grant*, 95 tons; the *Hancock*, 94 tons; *Sedgwick*, 80 to 85 tons; *Sheridan*, 80 tons; *Logan*, 70 tons; *Warren*, 65 tons; *Sherman*, 64.47 tons; *Thomas*, 62 tons; *Crook*, 55 tons; *Relief*, 50 tons; *McPherson*, 49 tons; *Sumner*, 45 tons; *Buford*, 38 tons; *Kilpatrick*, 34 tons; *McClellan*, 30 tons; *Burnside*, 28 tons. The coal capacity and the number of days it will last, under the usual conditions, are given as follows: *Logan*, 1,760 tons, 20 days; *Hancock*, 1,725 tons, 17 days; *Thomas*, 1,308 tons, 21 days; *Crook*, 1,300 tons, 20 days; *Sedgwick*, 1,161 tons, 14 days; *McPherson*, 1,020 tons, 19 days; *Buford*, 990 tons, 17 days; *Sumner*, 900 tons, 14½ days; *Relief*, 850 tons, 20 days; *Burnside*, 700 tons, 20 days; *Kilpatrick*, 681 tons, 20 days; *Sheridan*, 2,700 tons; *Meade*, 1,800 tons; *Sherman*, 1,795 tons; *Grant*, 1,750 tons; *Warren*, 1,358 tons; *McClellan*, 800 tons.

The price of coal per ton purchased en route varied from $4.73 to $8.65 for the *Meade*, $3.80 to $10 for the *Sherman*, and $10.35 to $11.50 for the *Hancock*. The vessels are properly equipped with donkey engines, steam windlasses, and winches.

Ventilation.

The ventilating apparatus in use on the different ships consists of cowls, steam exhaust and electric fans, metallic ducts and wind sails, besides the ordinary use of the doors, windows, and port holes, and is generally reported as of sufficient capacity and in good order. The *McClellan*, *Kilpatrick*, and *Relief* are reported as having no ventilating apparatus.

Messing.

The capacity of the saloon galleys on the different transports varies from 800 on the *Warren* to 50 on the *McClellan*, while on the hospital ship *Relief* 500 persons can be provided for; on the *Thomas*, *Grant*, and *Crook*, 200; *Sheridan*, 180; *McPherson*, *Sedgwick*, and *Logan*, 150; *Hancock*, *Kilpatrick*, and *Sumner*, 100; *Burnside*, 75. The saloon tables are reported as accommodating 92 persons at one time on the *Sedgwick;* 81 on the *Thomas;* 64 on the *Logan;* 60 on the *Sumner;* 56 on the *McPherson;* 54 on the *Hancock;* 50 on the *Crook;* 46 on the *Sherman;* 40 on the *Grant* and *Sheridan;* 30 on the *Warren;* 16 on the *Crook*, *Burnside*, and *McClellan;* 15 on the *Kilpatrick*, and 14 on the *Buford*. The average daily cost per saloon passenger is given as $1.25 on the *Warren*, $1 on the *Sumner* and *Sheridan*, 85 cents on the *Hancock*, and 64.7 cents on the *Relief*.

The capacity of the troop galleys is reported as from 1,500 to 2,000 on the *Sumner;* 1,800 on the *Logan*, *Sheridan*, and *Thomas;* 800 on the *Sherman* and *McPherson;* 500 on the *Sedgwick;* 400 on the *Buford*, and 200 on the *McClellan*. The *Relief* and *Kilpatrick* are not provided with troop galleys. A separate galley is used in preparing food for the crew on seven of the ships, and the average daily cost of messing of crew per man is reported as 50 cents on the *Sumner;* 41.5 cents on the *Hancock;* 37.5 cents on the *Sheridan*, and 37.3 cents on the *Relief*. With but two exceptions there are proper facilities for washing the mess kits.

Bakeries.

The capacity of the bakeries on the several ships are reported as follows: *Thomas*, 6,000 loaves; *Warren*, *Sumner*, *Logan*, and *Grant*, 2,000 loaves; *Sherman*, 1,800 loaves; *Hancock*, 1,500 rations; *Buford*, 1,000 loaves; *Crook*, 1,000 rations; *McPherson*, 600 loaves; *Sedgwick*, 600 pounds; *Kilpatrick*, 500 loaves; *Relief*, 400 loaves; *McClellan*, 150 loaves; *Burnside*, 150 rations.

Cold storage.

The refrigerating apparatus is mainly supplied by the ammonia process on the different vessels, though compressed air and the brine system are also used. The temperature varies from 20° to 40° according to the articles placed in storage. The capacity of the cold storage is reported as 500,000 pounds on the *McClellan;* 400,000 pounds on the *Relief;* 360,000 pounds on the *Thomas;* 210,000 pounds on the *Grant;* 90,000 pounds on the *Warren;* 50,000 pounds on the *Kilpatrick;* 4,500 pounds on the *McPherson;* 273 tons on the *Sherman;* 200 tons on the *Sheridan;* 85 tons on the *Hancock;* 12 tons on the *Sumner;* 19,000 cubic feet on the *Logan;* 1,280 cubic feet on the *Burnside*, and 1,200 cubic feet on the *Crook*.

A separate cold storage is also provided on the *Burnside*, *Crook*, *Grant*, *Kilpatrick*, *Logan*, and *Warren*, with capacities varying from 12 to 100 tons each.

Nine of the transports are supplied with ice machines, and the others carry a supply of ice. The ice machine on the *Thomas* has a capacity of 2 tons daily; *Logan* and *Sumner*, 1 ton; *Meade*, *Relief*, and *Sherman*-half a ton; *Grant*, 1,000 to 1,500 pounds; *Warren*, 1,000 pounds; *Hancock*, 150 to 720 pounds. The *Buford* carries 150 tons of ice; *Kilpatrick*, 60 tons; *McPherson*, 40 tons; *Sedgwick* and *Sheridan*, 35 tons each; *Logan* and *McClellan*, 30 tons; *Burnside*, 17 tons; *Warren*, 15 tons, and *Sumner*, 4 tons.

Electric-light plant.

Fifteen of the transports are reported as having electric-light plants, the number of lights varying with the capacities of the dynamos. On the *Logan* there are 3 dynamos supplying 1,157 lights; on the *Hancock*, 3 dynamos and 1,000 lights; on the *Thomas*, 3 dynamos and 800 lights; *Crook*, 2 dynamos, 430 lights; *Sumner*, 2 dynamos, 425 lights; *Sedgwick*, 2 dynamos, 386 lights; *Buford*, 2 dynamos, 285 lights; *Burnside* and *Kilpatrick*, 2 dynamos and 250 lights; *McClellan*, 1 dynamo and 125 lights. The electric-light plant on the *Kilpatrick* is reported as insufficient in capacity. The *Logan* has 3 searchlights; the *Thomas*, 2, and the *Sumner*, *McClellan*, and *Hancock*, 1 each.

Hospital.

The capacity of the hospitals on the several transports is somewhat limited in comparison with the number of troops carried, and to adequately provide for emergencies hospital ships fitted with the latest appliances for the comfort of the sick have been placed in service where needed. They are not always in the same part of the ship. On the *Relief* 250 patients can be provided for, and there is an operating room, laboratory, and diet kitchen. The hospital on the *Logan* can accommodate 64 patients, the isolation ward 24, and the detention ward 4 patients. There is also an operating room. The diet kitchen is reported as too small for the purpose; but there is no place where it is more important to appreciate how much can be done in a small space than aboard ship. The hospital on the *Grant* accommodates 60 patients, and on the *Sheridan* 56 patients; but there is no operating room or laboratory on either ship. The *Sherman* accommodates 56 patients and is provided with an operating room and isolation ward; the *Thomas*, 54 patients, has an isolation ward holding 12 patients, and a diet kitchen; the *Hancock*, 42 patients and isolation ward, 8; the *Sumner*, 32 patients, isolation ward, 8; has an operating room and diet kitchen, but no laboratory; the steering chains run through the hospital, making it very noisy; the *Warren*, 32 patients, has an isolation ward, but no operating room or laboratory; the *Meade*, 24 patients, with isolation ward and operating room; the *McClellan* and *Sedgwick*, 12 patients each, with isolation wards and diet kitchens; *Buford*, 12 patients; *Kilpatrick*, 10 patients; *Burnside* and *Crook*, 8 patients each, and diet kitchens, and latter with isolation wards; *McPherson*, 8 patients.

Bathing and toilet.

The bathing facilities on the transports consist of both tubs and shower baths, the former generally for the use of the officers, and the latter for the officers, troops, and crew. The number of tubs provided is reported as follows: *Relief*, 10; *Crook*, 6 officers', 1 hospital; *Hancock* and *Sumner*, 6; *Sheridan*, 5; *Sedgwick*, 5 officers'; *Burnside*, 4 officers'; *Warren*, 3; *Sherman* and *Kilpatrick*, 3 officers'; *Buford*, 3 rooms, officers'; *Logan* and *Grant*, 2 officers'; *McPherson*, 2 rooms, officers'; *McClellan*, 1 room, officers. The *Warren* has 31 shower baths; the *Hancock*, 30; the *Sheridan*, 21; *Grant*, *Sherman*, and *Logan*, 14; *Sumner*, 7; *Crook*, 4 for troops and 4 for crew; *McPherson*, 3; *Sedgwick*, 2 troops and 2 crew; *Buford*, 2, crew; *McClellan*, 1, crew. The closet seats are generally reported as sufficient in quantity.

Each stateroom is, as a rule, supplied with a lavatory for toilet purposes, and on many of the ships lavatories are provided for the use of the troops carried. The supply of basins for washing purposes is in most cases reported as ample. There are few features in which there has been a greater improvement than this since these ships came into Government possession, though vast changes have occurred in most.

Employees.

The employees are divided into three departments—deck, engineer, and steward's, with a few additional employees for miscellaneous duties. The following tabulation shows the number of employees on each vessel and monthly pay roll, as far as reported:

| Name of vessel. | Deck department.[1] | Engineer department.[2] | Steward's department.[3] | Other employees.[4] | Monthly pay roll. |
|---|---|---|---|---|---|
| Grant | 53 | 65 | 48 | 2 | [1] $2,395; [2] $3,055; [3] $1,770; [4] $200. |
| Hancock | 52 | 77 | 45 | 8 | [1] $2,318; [2] $3,087; [3] $1,625. |
| Logan | 52 | 62 | 43 | ........ | |
| Sherman | 51 | 68 | 50 | ........ | |
| Meade | 49 | 65 | 43 | ........ | |
| Sheridan | 48 | 69 | 46 | ........ | [1] $2,180; [2] $3,395; [3] $1,815. |
| Sedgwick | 45 | 61 | 39 | ........ | |
| Crook | 44 | 55 | 36 | ........ | |
| Thomas | 44 | 52 | ........ | ........ | |
| Sumner | 43 | 48 | 31 | ........ | |
| Kilpatrick | 43 | 46 | 29 | ........ | |
| Warren | 41 | 55 | 40 | 1 | [1] $1,955; [2] $2,675; [3] $1,640. |
| McPherson | 40 | 45 | 25 | ........ | |
| McClellan | 39 | 39 | 22 | ........ | |
| Burnside | 38 | 28 | 27 | ........ | |
| Relief | 35 | 39 | 15 | 30 | [1] $1,700; [2] $2,100; [3] $710. |
| Buford | 32 | 31 | 21 | ........ | |

The average monthly expenditures of the quartermaster are reported for the *Sheridan* to be $6,194.91; *Relief*, $6,115.95; *Logan*, $5,000, and *Sherman*, $4,924.

Commanding officer's office.

The *Logan*, *Sumner*, and *Thomas* are provided with an office set apart for the use of the commanding officer of the ship.

Prisoners' room.

The *Sumner* has one and the *Hancock* two prisoners' rooms.

Smoking and writing rooms.

Smoking and writing rooms are provided for the use of the passengers on the *Logan*, *Sumner*, and *Thomas*, and a library on the *Sumner* and *Hancock*.

Games.

Games for the amusement of the passengers are reported on the *Logan*, *Meade*, *Sherman*, and *Sumner*.

Treasure chamber.

Four of the transports, the *Sherman*, *Sumner*, *Warren*, and *Hancock*, have treasure chambers.

Laundry facilities.

The *Logan*, *Relief*, and *Thomas* are reported as having excellent laundry facilities, while those on the *Kilpatrick* are reported as poor. There are no facilities for laundry work on the *Sherman*, *Warren*, *Burnside*, *Crook*, *McClellan*, *McPherson*, *Sedgwick*, *Grant*, and *Hancock*.

General condition of vessels.

The *Grant*, *Logan*, and *Sheridan* are reported as in excellent condition; the *Meade* and *McClellan* are said to "roll badly," and the latter's bottom is reported as "foul." In the opinion of the inspectors, the *Logan*, *McClellan*, *Buford*, and *Kilpatrick* were not fit for carrying troops at date of inspection.

Animals.

The *Kilpatrick* has accommodations for 464 animals.

The following suggestions concerning animal transports, secured from an officer having personal experience, are submitted:

MANILA, P. I., *December 26, 1899.*

COLONEL: Referring to your request for a more or less detailed description of the manner of fitting horse ships and of transporting animals, I take pleasure in giving you the following data, which may prove interesting to you in inspecting these ships. I will first point out the salient points which ought to be considered and then enter more particularly into each.

In the order of their importance they are fresh air, plenty of cool, fresh water, facilities for cleanliness, exercise space, stalls, slings and appliances, feeding, and organization of working force.

(1) *Fresh air.*—This can be obtained only by artificial means, if it is intended to carry animals on more than one deck. There are two methods employed—the blower system, by which fresh air is forced into the holds, either by steam fans or electric fans, and the foul air is forced out of the hatches; or the exhaust system, by which foul air is exhausted from the holds, the fresh air finding its way into the holds through the hatches. Neither of these systems worked by itself reaches perfection, as it may occur that the hatches have to be battened down. Air can not be forced into a tight box, nor can it be exhausted by a fan, so both systems should be used together, one set of fans driving air in and one exhausting. Small fans that simply disturb the air already in the holds, like the fans used in offices, simply breed pneumonia among the animals. The electric system is better than steam. The steam pipes heat the holds and steam power is more expensive because of the condensation in pipes that lead so far from the boilers. Again, electricity can be taken to the spot where the power is needed by means of a wire and a fan placed there, while one might not be able to set up a steam engine in the place. Whether the air is forced in or exhausted the distributing system must be used; that is, pipes with openings must be run so that each animal will get some benefit.

I will not enter more into the details, such as placing dampers to control the amount of air on each deck, the calculations of sizes of fans and number of openings, the location of the larger openings, etc.; these are things which must be studied for each ship and frequently changed on the same ship, according to the wind and weather. A simple test of the efficiency of any system is to stop all the fans and go to the outlet. If hot air is coming out of the opening into which you are blowing cold air, the system is working against nature and is wrong. The ventilation of a ship is a difficult matter, and I find that on the *Port Stephens* I have made many mistakes, and one particularly in blowing cold air into the hold near the "roof," so speaking of the holds. It should be exhausted from here, but blown in on the floor. I offer as some apology for this that experts on the subject whom I consulted thought that the foul air containing carbonic acid, etc., would be near the floor, and exhaust pipes should reach the floor, while blowing-in pipes should be high under the decks. I know now by testing the system—stopping the fans—that I was wrong, and am using an unnecessarily large amount of power.

Should the Army ever fit out a proper cavalry ship these matters ought to be carefully considered, and our troops suffer very much at times from the same cause, viz., because the wrong kinds of fans are used. It is sufficient to say that the natural draft of air is down the hatch, and that the hot air hangs under the decks and in the ends of the holds, so that the exhaust fans must have the large openings near the bulkheads, and nature must be assisted by allowing the air to come in through the hatch, not retarded by trying to force air out of it. In general the fresh air is everything.

In my experience in carrying 5,000 head of stock to Cuba and Porto Rico and back I lost but 5 animals (Tenth Cavalry). On that ship animals were not placed below the air currents, and although the heat was intense at times the animals did not suffer, and on the ships I have since had the duty of fitting, those where the animals could be placed on the upper deck, and particularly where a double deck was built on, the animals came across in fine shape, out of 1,700 shipped from Seattle there being a loss of 22, and on the *Port Stephens*, which I brought over, a loss of 5 out of 510. I find that it is not heat that kills them, but deoxidation of the air, most of which occurs from some man trying to force air into a hold already full of foul air, which is like blowing into a bottle. * * *

*Water.*—No ship should be accepted for Government use carrying animals unless she has water-ballast tanks which can be cleaned out, whitewashed, and filled with fresh water. Ships of the class that will carry four to five hundred animals have usually from 600 to 1,000 tons of water ballast as a safeguard to the tanks getting salty, and as a means of replenishing a tank when half empty, condensers must also be used, but while condensed water is as good as fresh water, unless there is a tank to store it in it comes too hot for the animals. If I were inspecting a horse ship I would not only ask what is the capacity of the condenser, but where do you run the condensed water; and in many cases it will be found that sea water at 84° condensed, coming from the condenser at 90°, is turned right over to the horses. This gives them colic. Masters of ships do not like to use the ballast tanks for watering stock, because the tank being half empty makes the ship roll. Having obtained the supply, a distributing tank is placed on deck and a pipe run to each compartment, and at watering times the pumps are started. I have used barrels into which buckets are dipped. This is open to objection that the buckets lie about in the manure and get dirty and are then put in the barrels, fouling the water. I have also used a hose with a stopcock at the end and filled each bucket from that. This is too slow. Should I ever again have occasion to travel on a horse ship I would have made a small, square tank on wheels to roll about, large enough for two to drink from, with a 50-foot length of hose filling it as the horses drank. This would save the water from wetting the deck, would be clean, and avoid the fighting of two animals to drink from the same bucket at the same time. I should add here that in a twenty-two day trip from Honolulu I had but one case of colic, which I attribute to the cool water and the frequency of watering—at 9 a. m. (by the guard), at 11.30 a. m., at 4 p. m , and at 12 m. (by the guard). A careful account of water used shows that for animals 9 gallons a day in hot weather will be used, which also includes cooking and washing for 100 men on the ship. This allowance is ample. Ships carrying cattle give them but 6 gallons, but next to fresh air, plenty of water frequently given is important.

*Facilities for cleanliness.*—Every time a medical officer inspects the ships he inquires for disinfecting material, and a stress is laid on disinfecting. Probably it is all right, but one is apt to seek to obtain a result by disinfecting that should be obtained by cleanliness. A dealer from San Francisco came to me with disinfecting material in Seattle, and felt exceedingly hurt because I refused to recommend or purchase a gallon of stuff for each animal, saying that this was done in 'Frisco. Whether or not this is so I do not know, but he had imposed $1,400 worth of stuff on the officer before I got there, on this representation, so I tried an experiment on this trip. All manure was removed every day and the floors swept, and the disinfectant came to about $25, and consisted of a few jars of chloride of lime, 2 barrels of vinegar, 10 gallons of crude carbolic acid, and a barrel of quicklime; the vinegar is used where the hay or oats is fed from the floor and acid or lime can not be used, and they are used in stalls and scuppers; the ship was clean and well "disinfected."

It may perhaps sound egotistical to say that the master of the ship, who accompanied me each day at inspection, said that he had never in thirty years' experience carrying stock and horses, as well as other cargo, seen so clean a ship and one that smelled so well.

I use this as an illustration simply to show that disinfecting to a moderate extent is all right, but cleanliness is better. To keep the ship free from urine down below, special scuppers have to be fixed so that the urine will run into the limbers and from there to be pumped out by the bilge pumps; or urine tanks must be built if objection is made to running it into the limbers; it must be gotten rid of quickly, as standing in it all the time make the feet sore. The manure must be hoisted in baskets or canvas slings. The necessary cleaning materials, shovels, hoes, rakes, brooms, and baskets are of course provided for. In inspecting a ship as to cleanliness the first thing to find are the scuppers, the "sewers;" if they are not properly located and kept open, all the disinfectant in the world will not save the animals, or will any ventilating plant ventilate it. Yet I have seen many officers go in charge of horse ships who did not know that there was such a thing as a scupper.

*Exercise.*—This is quite a problem. You want to put all the animals on that you can and you dislike to see vacant spaces; but as far as I am concerned I have satisfied myself of the method. All kinds of schemes to give the animals a change of location and the use of his legs, even to building a treadmill, have been considered. On the *Stephens* during fine weather (every day except one or two from Honolulu), I walked the animals up from below on gangways with heavy cleats to an upper deck built with a strong rail around it; this deck will hold 120 animals and is so fixed that they can be walked and even trotted about it. They get air and exercise. Eight horses were brought from Honolulu on this deck with no stalls and they were groomed twice a day as if in stables. The mules got some grooming while up here and all of them were reached. It was, I consider, the best plan I ever hit on, but was not fully utilized forward because of a lot of hospital ambulances I had to take on it. But a cavalry ship carrying, say 400 horses and 400 men, one troop could be up here for grooming while its stalls were being cleaned by another troop below, each troop cleaning another's stalls. The stables would be thoroughly cleaned, the horses exercised, groomed, and looked over, besides getting fresh air. The little pack mules learned the way up and down so that they could be turned loose down below and come up without leading. To show you that it is entirely practicable, I inclose a snap shot of a horse with his sea legs on being ridden on the exercise deck in mid ocean.

*Stalls.*—No padded stalls should ever be placed on this ship, but smooth boards, boarded to within 16 inches from the floor; if more space is left they kick each other, if less they get their legs under when they fall or lie down and can not get them out. Ventilation, flow of urine, and ease of cleaning require that they should not be boarded way down. The stalls should be narrow, about 2 feet 4 inches wide, to keep them from pitching about in rough weather, and as long as the ship's beam will permit. I have measured the sway of animals on the upper decks in heavy weather and found that from the point of the shoulder to the buttock they would pass over 7 feet 6 inches, while the ordinary length of the animals is not above 5 feet; stalls, say, 6 feet 9 inches, are all right, if it is necessary to make them that short, but a wide canvas strap must then be used in place of a breast bar. I found that the breast bars bruised the breast so that many of them had to be lanced, then I threw the bars overboard and used a canvas strap; this should be made 8 inches wide, of hemp canvas (cotton canvas chafes too much) with a spreading stick at each end to keep it from getting wrinkled up. By adjusting this band the horse can come as far forward as one pleases, and a stall not over 5 feet may be made to do. The cleats should be well nailed down, made of hard wood, and should be placed one in front of the stall in the alley and five in the stall, equal distant apart; they should be made of 2 by 2 inch stuff.

There should be no back to the stall; that is, nothing boarded up for the animal to chafe his tail against. In midship stalls, where two are placed together, I find it is best to let the butt of the animals come together; on upper deck stalls, to leave a place for a man to get behind the animals, and on lower decks to let the back of the stall be the side of the ship.

*Slings.*—I am not satisfied about this subject. On leaving Seattle I had a sling under each animal, and in a seven days' gale we went through, when at times a man could not stand up, when the ship pitched about so the mules turned somersaults, I consider that the slings saved the lives of a great many mules. They would get tossed about and thrown around until they were worn-out—not one of them slept for seven days—they were worn-out and finally fell. The slings held them up and they laid there. A mule gives up and will not fight for his life like a horse, and many of them concluded to die and go out of business; but when they found the sling under them they seemed to take new courage. After leaving Honolulu I experimented the other way and did not put a sling on, and they stood up for twenty-three days, coming in without injury. We had some bad weather, too, but they had their sea legs on. Had we not struck the storm immediately on getting to sea I think they would have stood it all right; as it was, however, the sling proved of value. Slings for sick mules must of course be brought along. I say that the animals stood up all the time; but the pack mules learned how to lie down in their narrow stalls, and many of them would lie down just like a dog with their paws out in front and their hind legs doubled under. The orders to the guard were to see that their legs were not in danger, and if the mule was not sick not to disturb him. Frequently men made a mistake in this. Some animals sleep lying down and can't sleep on their feet, while others always sleep standing. When a man sees an animal down on a ship he immediately runs for help to make him get up, but the animal, if lying comfortably, is just as well off then as if he were on shore. As an example, I brought some live steers over to feed my men. They had the same space as a mule except that the partition was taken out between two. One always laid down until the other got tired and kicked him to make him get up, when he would lie down himself. They came through fat, and one was landed in Manila as a sample for the commissary.

*Feeding.*—In this respect I do not agree with many officers, who think that because an animal is on a ship he should be starved for fear of making him sick. It is a pleasure for me to be able to say that the mules are fat that came over with me. I find that I eat a full ration at sea—most men do after they get over their first uneasiness. I think it is much the same with an animal. Before starting, I fed bran mash three days, once a day, to clean them out; then for about thirty-six hours after leaving they got full ration of hay but no grain; then 5 pounds of oats a day and full ration of hay; but even this was not a strict rule; each wagon master had had an extra sack of oats each day to feed large mules that were running down. In the heaviest weather extra hay was always issued at night and the animals were fed at midnight on hay. One thing must be borne in mind, that mules pitching about trying to keep their feet, work as hard as if they were pulling a wagon, and if the weather is at all cool will eat full rations of hay and grain. In sultry weather, with the sea smooth, I would not feed quite so much. Bran mash was fed every second or third day. To lay down a rule that animals are to be fed the same in all weather, that the little packs are to have the same as the big wheel mules, is to make a nonentity of the officer in whose charge they are. I find also that feed boxes are of little value. As far as Honolulu I used them, then I put them in the hold and fed off the deck both hay and grain. This seemed to please the mules more, and I could always tell at a glance if one was off his feed. It also had the effect of making the men sweep the deck often. This is where I used the vinegar for disinfecting.

*Organization.*—I selected a train master and 5 wagon masters from the teamsters, at increased wages. The ship force thus organized consisted of a train master, 5 wagon masters, 75 teamsters, a veterinary surgeon, an assistant veterinary surgeon, and 3 cooks.

Each wagon train had its own dock of mules, its own mess, did its own guard duty—1 teamster being detailed as mess man for each, and 1 to report to the veterinary surgeon from each. This gave each wagon master a working force, after detailing the guard of 3 from each, of 10 men for 100 mules, which is not too much. After a few days out things ran very nicely, which was somewhat to be wondered at when one considers that the "teamsters" were a bit rough. For punishment I took away their pay or cut down their rations or gave them extra work, and no disorders or fights of any kind occurred. After having several outfits of this kind to and from Cuba I have concluded that the only way to do is to fix the responsibility for work not done on some man. In carrying the regular cavalry, of which I took the Second, Fourth, Seventh, and Tenth over, I found it necessary to take a piece of chalk and mark over each horse the troop he belonged to. So with those civilians, in place of saying, "Why did not someone clean up here?" by assigning certain portions of the ship to each wagon boss I can call him to time and say, "Why did not you do it?"

The teamsters had to be fed by me, and a galley built for the purpose. On authority from the chief commissary, Department of the Columbia, I provided extra food of a more varied nature than the ration, and here again I experimented. We have been paying chartered ships 75 cents a day for feeding these men. I provided a very good table for them, with fresh meat—mutton and beef (both carried on the hoof)—eggs, butter, milk, canned fruit, apples, etc., and paid the 3 cooks—1 $50, the other 2, $35 per month each—had ice and lime juice all the time, at a cost of 12 cents a meal, which included all wastage and represented the total cost of all supplies and labor, divided by the actual number of meals. A copy of each day's bill of fare had been kept, as well as morning reports of mules and teamsters, and temperature of the holds every four hours.

The ship left Seattle, Wash., November 9 (510 mules), under orders for Kobe; but finding that I could not get there I went to Honolulu, and reached that point after being out sixteen days, losing 2 mules; rested five days and came here, losing 3 more mules; laid here thirty-six hours, and then got lighters and put them all off in one day. * * * I ventured to express the hope that the letter may contain some suggestions which will aid you in inspecting this class of transports. The work on them is distasteful to most officers, and seems to do haphazard, picking up any man who comes along and relieving him after one trip, when he is beginning to know something of it.

With most of them the ship is simply used to get them over; but where you consider the suffering the poor brutes undergo, caused oftentimes by the officers in charge being seasick for the first week, or the teamsters being either drunk or seasick, one feels that a proper selection should be made and the officer required to stay whether he wanted to or not.

Very respectfully,

J. C. Byron,
*Captain, Assistant Quartermaster, U. S. A.*

Col. E. A. Garlington,
*Inspector-General.*

### CHARTERED TRANSPORTS.

Cost of charter.

The amount paid by the Government per day for the chartered transports is reported as follows: *Tartar*, $1,000; *Aztec*, $800; *Flintshire*, $700; *Westminster*, $650; *Port Albert*, $600; *Pennsylvania*, $600.

Age.

The oldest of the chartered vessels is the *Pennsylvania*, 27 years of age, the *Athenian* being 26 years old, the *Newport* 20, the *Aztec* 5, and *Flintshire* and *Port Albert* 4 years each.

Material.

The hulls of the *Aztec*, *Flintshire*, *Westminster*, and *Port Albert* are built of steel, and the *Tartar* of iron.

Dimensions.

The chartered transports are smaller than the majority of those owned by the Government, the longest of the former being the *Tartar*, 376 feet 5 inches, followed by the *Westminster*, 370 feet 6 inches; *Aztec*, 350 feet; *Pennsylvania*, 343 feet, and *Flintshire*, 327 feet. The width of beam varies from 47 feet 2 inches in the *Tartar* to 42 feet in the *Aztec*.

Tonnage and cargo capacity.

The gross and net tonnage of these vessels is reported as follows: *Tartar*, 4,358 and 2,768, respectively; *Westminster*, 3,809 and 2,510; *Port Albert*, 3,517 and 2,250; *Pennsylvania*, 3,344 and 2,567; *Newport*, 2,735 and 1,806; *Flintshire*, gross, 3,815; *Athenian*, net, 2,439. The cargo capacity of the *Athenian* is given as 4,000 tons, and of the *Newport* as 2,300 tons.

Draft.

The *Tartar* has the deepest mean draft of the chartered transports, both loaded and light, the figures being, respectively, 25 feet 6 inches and 19 feet 9 inches. The *Pennsylvania* comes next with 24 feet 6 inches and 16 feet 4 inches, and then the *Flintshire*, 24 feet 6 inches and 14 feet.

Ballast.

The *Westminster* carries 1,344 tons of ballast, 744 of water, and 600 of rubbish; the *Aztec*, 1,306 tons, 707 of coal and 606 of water; the *Flintshire*, 600 tons of water ballast; the *Tartar*, 484 tons of water ballast, and the *Pennsylvania* 450 tons, 150 water and 300 kentledge.

Sails.

The chartered transports are provided with fore and aft sails, those on the *Port Albert* being used only as a means of steadying the ship.

Steering apparatus.

The *Pennsylvania* has both electric and hand steering gear and the *Tartar* steam steering gear.

Fittings.

The gangways, companion ladders, towing hawsers, chronometers, compasses, and anchors are reported as sufficient.

Total payments.

The amounts paid these several vessels during the last fiscal year, or the totals, have not been definitely reported.

Cabins.

The *Tartar* has 35 cabins, accommodating 105 first-class passengers; the *Flintshire*, 4 cabins for 8 first-class passengers, and has also accommodations for 34 second-class passengers. The *Athenian* has cabin room for 24 first-class and 98 second-class passengers. The *Newport* has 34 cabins and the *Pennsylvania* 21 cabins.

Capacity for troops.

The *Tartar* is reported as being fitted to carry 1,165 troops and the *Newport* 525 in bunks. On the latter 7 ventilating fans are provided.

Life-saving apparatus.

Ten life-boats, accommodating 380 persons, and 4 ordinary boats, 1,730 life-preservers, and 14 life buoys constitute the life-saving apparatus on the *Tartar*. The *Pennsylvania* has 8 life-boats, 9 ordinary boats, 4 life rafts, 90 life-preservers, and 12 life buoys; the *Newport*, 8 life-boats, 5 life rafts, and an ample supply of life-preservers; the *Flintshire*, 4 ordinary boats, 98 life-preservers, and 6 life buoys.

Fire apparatus.

The vessels are reported properly equipped with steam pumps, hose, extinguishers, and fire buckets.

Water supply.

The *Athenian* is equipped with 5 tanks for fresh water, their total capacity being 250 tons; the *Newport* has 4 tanks holding 14,000 gallons; the capacity of the tanks on the *Port Albert* is 650 tons, and on the *Pennsylvania* 70 tons. The distilling apparatus on each ship provides the following supply of fresh water daily as needed: *Athenian*, 4,000 gallons; *Pennsylvania*, 2,200 gallons; *Newport*, 1,800 gallons; *Aztec*, 1,500 gallons; *Flintshire* and *Tartar*, 1,000 gallons each. The *Pennsylvania*, *Athenian*, and *Aztec* also carry fresh water as ballast.

Engineer department.

Six of the chartered transports have engines of the triple-expansion type, and five are propelled by single screws. Their steaming capacity averages about 10 knots per hour, the average speed of the fastest, the *Newport*, being 11.2 knots, and that of the slowest, the *Pennsylvania*, 9.42 knots.

The daily consumption of coal and the coal capacity in tons are reported as follows: *Tartar*, 50 and 1,700; *Westminster*, 39 and 980; *Newport*, 34 and 1,100; *Flintshire*, 30 and 1,140; *Aztec*, 30 and 900; *Pennsylvania*, 21.12 and 580; *Athenian*, 70 (daily consumption), and *Port Albert*, 1,200 (coal capacity).

The vessels are properly equipped with steam windlasses and winches.

Ventilation.

The means of ventilation on the *Athenian* and *Flintshire* is by the exhaust system, and on the *Tartar* by electric fans. The *Pennsylvania* is reported to be without ventilating apparatus. There is nothing of more importance in fitting up a transport, and the simple and permanent means seem to prove the best under the various climates and weather the ships are subjected to.

Messing.

The capacity of the saloon galley on the *Tartar* is given as 300, with tables seating 108. There is also a separate galley for the crew. On the *Pennsylvania* the capacity of the troop galley is 1,000 and of the tables 45.

The average daily cost per saloon passenger for subsistence is reported as $1 for first-class and 85 cents for second-class on the *Athenian;* $1 for officers on the *Westminster* and 65 cents for second-class passengers on the *Flintshire.* The average daily cost of subsistence for quartermaster's employees on the *Aztec* is reported as 75 cents, and on the *Westminster* as 85 cents, and for enlisted men on the latter vessel 75 cents. It is submitted that the price should be officially fixed for all at about this.

The capacity of the bakery on the *Tartar* is given as 1,000 pounds and on the *Newport* as 400 pounds.

Cold storage.

The refrigerating apparatus on the *Tartar* is reported in good order, and the capacity of the cold storage 20,000 pounds. The temperature maintained is 28°. There is also a separate cold storage on this vessel with a capacity of 30 tons, and in addition 20 tons of ice are carried. On the *Pennsylvania* the brine-circulation system is used, the cold-storage capacity being 60,000 pounds, and the temperature maintained 29°; 11 tons of ice are also carried. The capacity of the cold storage on the *Athenian* is 10 tons and on the *Newport* 14,240 pounds; and on the former vessel there is an ice machine with a capacity of 140 pounds.

Electric-light plant.

The electric-light plant on the *Tartar* is reported in good condition, while on the *Flintshire* it is said to be poor and on the *Newport* as of insufficient power, with 300 lights. The *Pennsylvania* has 1 dynamo and the *Tartar* 3 of 150 amperes each.

Hospital.

The capacity of the hospital on the *Newport* is 24 patients, with isolation ward for 3 patients. On the *Tartar* 18 patients can be taken care of in the hospital, the isolation ward providing for 6, and on the *Flintshire* the hospital accommodates 6 patients.

Bathing and toilet.

A suitable number of bath tubs and shower baths are reported on the *Newport*, *Tartar*, and *Westminster*. The *Pennsylvania* has but one bath tub. The closet seats are reported as sufficient in number and lavatories and supply of basins adequate.

Employees.

The following table shows the number of employees, as reported, in the deck, engineer, and steward's departments, and the number of miscellaneous employees; also monthly pay roll:

| Name of vessel. | Deck department. | Engineer department. | Steward's department. | Other employees. | Monthly pay roll. |
|---|---|---|---|---|---|
| Newport | 21 | 28 | 20 | 6 | |
| Pennsylvania | 56 | | | | |
| Aztec | | | | 42 | |
| Flintshire | | | | 42 | $1,740 |
| Tartar | | | | 6 | 360 |
| Westminster | | | | [1] 34<br>[2] 7 | |
| Port Albert | | | | 48 | |
| Athenian | [3] 109 | | | | |

[1] Civilians.

[2] Enlisted.

[3] Including engineer, and steward's departments.

**Animals.**

The *Port Albert*, *Athenian*, *Westminster*, *Aztec*, and *Flintshire* are reported equipped with stalls and other facilities for transporting animals, the number of stalls on each vessel being: *Port Albert*, 520; *Athenian*, 393; *Westminster*, 366; *Aztec*, 365, and *Flintshire*, 328. The stalls are located on the main deck and between decks. On the *Flintshire* the stalls are reported to be too long, and on the *Athenian* too short and too wide for the proper accommodation of the animals transported.

The *Aztec*, *Flintshire*, *Westminster*, and *Port Albert* have slings for the animals, but they are reported to be but little used. The ventilation is mostly by forced draft and exhaust fans. The *Westminster* carries a supply of fresh water in her ballast tanks. The facilities for cleanliness on the *Athenian*, *Aztec*, and *Westminster* are reported as inadequate. The *Flintshire* has a hospital for sick animals.

**General condition of vessels.**

The vessels are generally reported in good condition, though the *Flintshire* and *Westminster* are said to roll badly.

## VESSELS BEFORE PURCHASE.

The following table gives some interesting data relative to some of the vessels of the army transport fleet before their purchase by the Government when in the service of some of the leading ocean and local steamship lines, and affords an opportunity to some extent for comparison with their present service. The data tabulated shows for these vessels the extreme ports between which plying and distance in miles; average number of passengers and tons of merchandise carried per trip; rates per passenger and ton of merchandise for extreme distance; number of employees, including officers, in deck, engineer, and steward's departments; monthly pay roll of same; average daily consumption of coal and speed per hour; total average cost per trip; average expenditure per annum for repairs, and year in which built:

| Names of steamships. | | Number. | Extreme ports between which plying. | Distance, round trip. | Average number of passengers carried per trip. | Average tons of merchandise per trip. | Rates per passenger for extreme distance. | Rates per ton of merchandise. | Number of employees, including officers, in deck, engineer, and steward's departments. | Amount of monthly pay roll of same. | Average consumption of coal. | Average speed per hour. | Total average cost per trip. | Average expenditure per annum for repairs. | When built. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Old name. | New name. | | | | | | | | | | | | | | |
| | | | | *Miles.* | | | | | | | | | | | |
| Mississippi | Buford | 1 | London and New York. | 6,558 | 74 | 5,307 | $114.22 | $4.65 | 50 | $1,800 | 1,050 | 11.42 | $18,007.82 | $10,111.36 | Oct., 1890. |
| Mohawk | Grant | 2 | do | 6,600 | 74 | 6,801 | 114.22 | 4.75 | 72 | 2,525 | 1,600 | 11.63 | 26,129.06 | 17,455.26 | May, 1892. |
| Bessie | Kearny | 3 | Harbor work only | [1]10 | 0 | 200 | 0 | {$1 to $2.50.} | 6 | 395 | [5]12 | 8 | ............ | 5,000.00 | 1881. |
| Michigan | Kilpatrick | 4 | London and New York. | 6,600 | 0 | 6,672 | 0 | 4.70 | 42 | 1,800 | 1,000 | 11 | 17,090.37 | 10,805.85 | Oct., 1890. |
| Manitoba | Logan | 5 | do | 6,600 | 74 | 7,055 | 114.22 | 4.75 | 76 | 2,550 | 1,500 | 12.47 | 24,680.49 | 13,714.81 | Apr., 1892. |
| Obdam | McPherson | 6 | Rotterdam, Holland, and New York. | [1]3,400 | ([2]) | ([3]) | ([4]) | ([4]) | 80 | ([4]) | [5]45 to 50 | [6]12½ to 13½ | ([4]) | ([4]) | 1880. |
| Berlin | Meade | 7 | Antwerp and New York. | [1]3,388 | ........ | ........ | ........ | ........ | 180 | ........ | [5]108 | [6]14.42 | ........ | ........ | 1874. |
| Missouri | Missouri | 8 | London and Philadelphia. | 7,000 | 0 | 5,102 | 0 | 3.56 | 38 | 1,700 | 800 | 10 | 11,974.86 | 8,914.54 | Jan., 1889. |
| Chester | Sedgwick | 9 | Southampton and New York. | [1]3,141 | ........ | ........ | ........ | ........ | 167 | ........ | [5]95 | [6]13.23 | ........ | ........ | 1873. |
| Massachusetts | Sheridan | 10 | London and New York. | 6,600 | 74 | 7,283 | 114.22 | 5.00 | 80 | 2,550 | 1,500 | 12.26 | 24,112.31 | 25,404.80 | Mar., 1892. |
| Mobile | Sherman | 11 | do | 6,600 | 74 | 7,264 | 114.22 | 4.69 | 78 | 2,550 | 1,600 | 12.01 | 25,778.82 | 17,532.64 | Mar., 1893. |
| Hartford | Terry | 12 | Hartford, Conn., and New York. | [1]140 | 250 | 200 | ([7]) | 2.50 | 62 | 2,400 | [5]32 | 12 | 450.00 | 10,000.00 | 1891. |
| Minnewaska | Thomas | 13 | London and New York. | 6,600 | 88 | 7,106 | 129.44 | 4.48 | 80 | 2,600 | 1,650 | 12.42 | 30,899.11 | 17,633.15 | Feb., 1898. |
| Scandia | Warren | 14 | Hamburg and New York. | [1]3,600 | ([8]) | ([9]) | ([10]) | ([11]) | 78 | ([12]) | [5]65 | [6]13 | ........ | ........ | 1889. |

[1] One way.
[2] Between 300 and 400.
[3] 1,500 tons west bound, 3,000 tons east bound.
[4] Varying.
[5] Tons per day.
[6] Knots.
[7] $1.50 one way; $2.25 round trip.
[8] Westward, 37 cabin, 440 steerage; eastward, 13 cabin, 91 steerage.
[9] 1,455 tons west bound, 3,028 tons east bound.
[10] Cabin, $60; steerage, $30.
[11] Westward, $18.15 per M.; eastward, $17.50 per M.
[12] Deck department, $2,812 per month; engineer's department, $2,645 per month.

For purposes of comparison or ready reference the following compilation of the data received is submitted:

| Names. | Number. | Cost. | Cost of fitting up. | Age. | Description. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Material. | Length. | Breadth. | Tonnage. | | Mean draft. | | Ballast carried. | Sails. | Steering apparatus. | Armament. |
| | | | | | | | | Gross. | Net. | Loaded. | Light. | | | | |
| U. S. transports: | | | | Yrs. | | Feet. | Feet. | | | Feet. | Feet. | Tons. | | | |
| Buford | 1 | $350,000.00 | $480,345.56 | 10 | Steel | 370 | 44 | 3,721 | 2,833 | 21 | 15 | 600 pig iron, 812 water. | 5 | Good | |
| Burnside | 2 | 125,000.00 | 183,466.29 | 18 | Iron | 295 | 36½ | 2,194 | 1,405 | 19$\frac{4}{12}$ | 15½ | 185 pig iron, 340 water. | 4 | Good | |
| Crook | 3 | 240,000.00 | 238,317.59 | 17 | ...... | 435 | 47 | 4,126 | 2,703 | 21 | 14 | 500 iron | 0 | Good | |
| Grant | 4 | 660,000.00 | 350,658.69 | 8 | Steel | 445 | 49 | 5,590 | 3,604 | 23 | 15½ | 1,000 iron and stone, 1,300 water. | 0 | Steam, good | |
| Hancock | 5 | 600,000.00 | 547,016.28 | 21 | Iron | 475 | 45½ | 5,305 | 3,356 | 28½ | 19 | 560 iron | Steadying only. | Steam | 4 6-pdr. |
| Kilpatrick | 6 | 350,000.00 | 538,039.30 | 10 | ...... | 370 | ...... | ...... | ...... | ...... | ...... | 750 pig iron | 0 | Good | |
| Logan | 7 | 660,000.00 | 558,839.33 | 8 | Iron | 445 | 49 | 5,590 | 3,604 | 25½ | 18½ | 1,000 iron | 0 | Steam, good | 4 R. F. |
| McClellan | 8 | 175,000.00 | 314,418.53 | 15 | Steel | 325 | 38 | 3,500 | 1,827 | 22 | 17 | 280 pig iron, 200 water. | 3 | Steam, poor; hand, good. | |
| McPherson | 9 | 250,000.00 | 155,562.77 | 20 | Steel | 420 | 39½ | 3,699 | 2,277 | 22 | 16½ | 730 pig iron | 5 | Insufficient | |
| Meade | 10 | 400,000.00 | 503,733.14 | 26 | Iron | 488½ | 44 | 5,560 | 3,072 | ...... | ...... | ...... | 0 | Williamson | 4 6-pdr. |
| Relief | 11 | ...... | ...... | 4 | Steel | 313 | 46 | 3,094 | 1,987 | 17$\frac{4}{12}$ | 11½ | 300 water | Fore and aft. | Steam and screw wheel. | 50 rifles, cal. .30. |
| Sedgwick | 12 | 200,000.00 | 278,424.62 | 26 | ...... | 465 | 44 | 4,770 | 2,923 | 26 | 22 | 375 pig iron | 4 | Good | |
| Sheridan | 13 | 660,000.00 | 624,644.38 | 8 | Steel | ...... | 49 | 5,590 | 3,604 | ...... | ...... | 1,230 water | 0 | Steam, good | |
| Sherman | 14 | 660,000.00 | 572,847.58 | 7 | Steel | 452 | 49 | 5,780 | 3,725 | 27 | 17 | 800 iron, 1,219 water. | Good | Steam and hand | |
| Sumner | 15 | 160,594.00 | 652,218.89 | 13 | ...... | 361 | 40 | 3,458 | 2,182 | 24 | 20 | 417 water | 4 | Steam | 3 6-pdr. |
| Thomas | 16 | 660,000.00 | 455,336.37 | 6 | Steel | 465 | 52 | 6,000 | 4,300 | 26¾ | 15 | 1,000 iron | 0 | Very good | 2 6-pdr. |
| Warren | 17 | 200,000.00 | 192,328.61 | 11 | Steel | 378 | 44 | ...... | ...... | 24 | 18 | ...... | Fore and aft. | Steam | |
| Chartered: | | | | | | | | | | | | | | | |
| Athenian | 18 | ...... | ...... | 26 | ...... | ...... | ...... | ...... | 2,439 | ...... | ...... | ...... | ...... | ...... | |
| Aztec | 19 | (1) 800.00 | ...... | 5 | Steel | 350 | 42 | ...... | ...... | ...... | ...... | 700 coal, 606 water | Fore and aft. | ...... | |
| Flintshire | 20 | (1) 700.00 | ...... | 4 | Steel | 327 | 46 | 3,815 | ...... | 24½ | 14 | 600 water | do | ...... | |
| Newport | 21 | ...... | ...... | 20 | ...... | ...... | ...... | 2,735 | 1,806 | ...... | ...... | ...... | 4 | ...... | |
| Pennsylvania | 22 | (1) 600.00 | ...... | 27 | ...... | 343 | 43 | 3,844 | 2,567 | 24½ | 16½ | 300 kentledge, 150 water. | Fore and aft. | Electric and hand | |
| Port Albert | 23 | (1) 600.00 | ...... | 4 | Steel | ...... | ...... | 3,517 | 2,250 | ...... | ...... | ...... | Steadying only. | ...... | |
| Tartar | 24 | (1) 1,000.00 | ...... | ...... | Iron | 376$\frac{4}{12}$ | 47¾ | 4,358 | 2,768 | 25½ | 19¾ | 484 water | Fore and aft. | Steam | |
| Westminster | 25 | (1) 650.00 | ...... | ...... | Steel | 370½ | 46½ | 3,809 | 2,510 | ...... | ...... | 744 water, 600 rubbish. | do | ...... | |

[1] Cost of charter per day.

| Names. | Description. | | | | | | | | Quarters, etc. | | | | | Life-saving apparatus. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Cabins. | | Troop decks. | | | | | | | | | |
| | Gangways. | Companion ladders | Towing hawsers. | Anchors. | Chronometers. | Compasses. | Awnings, full set. | Discharge of scuppers. | Number. | Capacity. | Number. | Height (feet). | Capacity. | Life boats. | Common boats. | Steam launches. | Life rafts. | Capacity of boats and rafts. | Life preservers. | Life buoys. |
| U. S. transports: | | | | | | | | | | | | | | | | | | | | |
| 1 | | | | 5 | 3 | 7 | | | 13 | 26 | | | 600-700 | 6 | | 1 | 7 | | 725 | 9 |
| 2 | | | 2 | 6 | 3 | 13 | Yes | | 13 | 26 | | | 150 | 5 | | 1 | 2 | | 490 | 4 |
| 3 | | | 1 wire. | 6 | 3 | 3 | Good | Below water line. | 29 | 82 | | | 800 | 11 | | | 4 | | 1,200 | 6 |
| 4 | Good. | Good. | Good. | Good. | Good. | Good. | 2 sets | Not all above water line. | 34 | 71 | | 7 feet 8 inches to 8 feet 2 inches. | 1,800 | 10 | 2 | | 8 | 650 | Ample. | 6 |
| 5 | | | 5 | 7 | Yes. | Yes. | Yes | | 26 | 52 | 2 | 7.5 | 1,060 | 6 | 4 | 1 | 9 | 562 | 1,242 | 12 |
| 6 | | | 2 | 12 | | 3 | Yes | Above water line. | 9 | 27 | | | [1]800 | 7 | | 1 | 2 | | 700 | 0 |
| 7 | | | 2 | 9 | 3 | 3 | 2 sets | | 41 | [2]90<br>[3]28 | | | 1,620 | 12 | | 2 | 8 | 750 | 2,000 | 15 |
| 8 | | | 1 too short. | 4 | 2 | 4 | | Above water line. | 4 | 8 | 3 | | 125 | 5 | | 1 | | | 240 | 12 |
| 9 | | | 6 | 7 | 3 | 4 | Yes | do | 32 | 74 | 4 | | 600 | 4 | 4 | 1 | 2 | | 800 | 12 |
| 10 | | | | Good. | Good. | | | | 30 | | 2 | 7.7 upper, 7.8 lower. | 1,204 | 17 | | 1 | 2 | 625 | 1,940 | 25 |
| 11 | Good. | Good. | Good. | Good. | One needed | | | | | | | 10 | [4]250 | 8 | | 2 | 4 | 380 | 400 | 2 |
| 12 | | | 2 | 8 | 3 | 3 | Yes | Above water line. | 35 | 63 | | | [1]1,200 | 9 | | 1 | 4 | | 1,406 | 4 |
| 13 | Good. | Good. | Good. | Good. | Good. | Good. | | | 33 | 66 | | 7 feet 7 inches. | 1,842 | 9 | | | | | 2,400 | 18 |
| 14 | | | Good. | Good. | Good. | Good. | Yes | | 32 | 60 | | 8 | 1,717 | 8 | 2 | | 8 | 670 | 2,000 | 13 |
| 15 | 4 | 7 | 2 | 4 | 3 | 3 | | Below water line. | 32 | 61 | | 10 | 963 | 4 | 9 | 1 | 4 | 1,150 | 1,500 | |
| 16 | | | 2 | 5 | 3 | 5 | Yes | | [2]35<br>[3]13 | [2]69<br>[3]39 | | | 1,653 | 14 | | 1 | 16 | | 2,000 | 22 |
| 17 | Good. | Good. | Good. | Good. | Good. | Good. | Good | Not all below water line. | 18 | 36 | | 7 feet 5¼ inches, except orlop, 7 feet 11 inches. | 1,242 | 9 | | [5]1 | 0 | 547 | 1,500 | 16 |
| Chartered: | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | [2]24<br>[3]98 | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | |
| 20 | Good. | Good. | Good. | Good. | Good. | Good. | | | [2]4 | [2]8<br>[3]34 | | | | | 4 | | 0 | | 98 | 6 |
| 21 | | | | | | | | | 34 | | | 9 feet 6 inches. | 525 | 8 | | | 5 | | Ample. | |
| 22 | | | Good. | Good. | Good. | Good. | Worn | Above water line. | 21 | | | | ([6]) | 8 | 9 | | 4 | | 90 | 12 |
| 23 | | | | | | | | | | | | | | | | | | | | |
| 24 | Good. | Good. | Good. | Good. | Good. | Good. | | | 35 | 105 | | 8 feet and 7 feet 6 inches. | 1,165 | 10 | 4 | | 0 | 380 | 1,730 | 14 |
| 25 | | | | | | | | | | | | | | | | | | | | |

[1] Claimed. [2] First class. [3] Second class. [4] Patients. [5] Also 1 gig. [6] None at present.

| Number. | Fire apparatus. | | | | | Water supply. | | | | | Engineer department. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | Propellers. | | Shafts. | | Speed (knots per hour). | | |
| | Steam pumps. | Hose (feet). | Extinguishers. | Hand grenades. | Fire buckets. | Capacity of tanks (gallons). | Intended for how many days. | Distilling apparatus. | Capacity per day (gallons). | Fresh water carried as ballast (tons). | Engines. | Horsepower. | Kind. | Diameter. | Diameter. | Length. | Maximum. | Average. | Economical. |
| U. S. transports: | | | | | | | | | | | | | | *Ft. in.* | *In.* | *Feet.* | | | |
| 1 | | 1,000 | 12 | | | 203,000 | 60 | | 2,880 | | Triple expansion | 2,200 | Single | | | | 12¼ | 11 | |
| 2 | Yes | | 10 | | | 15,000 | 20 | Yes | 2,880 | 340 | do | 1,300 | Single | 16 0 | 11¾ | | 12 | 11 | |
| 3 | Yes | 500 | 30 | | | 163,000 | | Yes | 2,000 | | Tandem compound | 3,000 | Twin | 14 0 | 13¼ | | | | |
| 4 | Yes | | 8 | | 120 | [1]11,200 | | | 3,000 | | Triple expansion | | Double | | | | | 12 | 12 |
| 5 | Yes | Ample. | 6 | | 32 | 38,000 | | Yes | 5,000 | | do | | Single | | | | 15 | 13.2 | 13 |
| 6 | | 1,000 | 24 | | | | | | 2,500 | | do | | | 16 0 | 14⅛ | | | | |
| 7 | | 2,000 | 200 | | 80 | [1]11,200 | 12 | | 10,000 | | do | | Twin | 16 0 | 12¼ | | | 12 | 10 |
| 8 | | 400 | 12 | | | 18,000 | 25 | | 3,600 | | | | Single | 16 0 | 14 | | | | |
| 9 | | 900 | 12 | Yes. | | 20,000 | 10 | | 4,800 | | Triple expansion | | Single | 26 0 | 14⅛ | | | | |
| 10 | | | 20 | | 200 | 60,000 | | | | | do | | Single | | | 400 | 15 | 13⅜ | 12 |
| 11 | Yes | Ample. | 50 | | 90 | ([2]) | | | 3,000 | | do | | Single | | | | | 13 | 12 |
| 12 | | 500 | 8 | Yes. | 80 | 19,000 | | Yes | 10,000 | | Double expansion | 3,380 | Single | 19 0 | 22 | | 14 | 13.5 | |
| 13 | Yes | | 3 | 32 | 111 | | | | 2,500 | 500 | | | Twin | | | | | 12.8 | 10 |
| 14 | Yes | | | 6 | 84 | | 90 | | [1]15 | 1,200 | Triple expansion | | Twin | | | | | 11.51 | 10.5 |
| 15 | Yes | | | 0 | | 109,000 | | 2 evaporators and distillers. | 6,000 | Yes. | Double expansion | 2,000 | Single | 17 0 | 15 | | | 10⅛ | 9 |
| 16 | | 600 | | | | 335,000 | | | 15,000 | | Good | | Twin | 16 4 | 13 | | | | |
| 17 | Yes | | 72 | | 100 | | | 1 condenser. | 2,500 | | Triple expansion | | Single | | | | | 12.9 | 12.5 |
| Chartered: | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | [1]250 | | | 4,000 | 280 | | | | | | | | 12 | 9 |
| 19 | Yes | | | | | | | Yes | 1,500 | 606 | Triple expansion | | Single | | | | | 10 | |
| 20 | Yes | 450 | | | 46 | | | Yes | 1,000 | | do | | Single | | | | | 10 | |
| 21 | | | | | | 14,000 | | Yes | 1,800 | | | | | | | | 14 | 11.2 | |
| 22 | Yes | | 4 | | 90 | [1]70 | | Yes | 2,200 | 150 | Triple expansion | | Single | | | | | 9.42 | 10 |
| 23 | Yes | | | | | | | | 650 | | do | | | | | | | | |
| 24 | Yes | | 8 | | 12 | | | Yes | 1,000 | | do | | Single | | | | | 11+ | 11+ |
| 25 | Yes | | | | 50 | | | | | | do | | Single | | | | | | |

[1] Tons.

[2] Water purchased on shore and distilled on board.

| Number. | Engineer department. | | | | | | | Ventilation. | | Messing. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Coal bunkers. | | | | | | | | Saloon galley. | | | | | | | |
| | Average daily consumption of coal. | Number. | Capacity. | Coal carried (days). | Donkey engines. | Steam windlass. | Winches. | Apparatus. | Wind sails. | Capacity. | Capacity of tables. | Average cost per saloon passenger per day. | Capacity of troop galley. | Separate galley for crew. | Average daily cost of crew per man. | Capacity of bakery. | Facilities for washing mess kits. |
| U. S. transports: | *Tons.* | | *Tons.* | | | | | | | | | | | | | | |
| 1 | 38 | 3 | 990 | 17 | | Yes | Yes | 2 fans | | | 14 | | 400 | Yes | | 1,000 loaves | |
| 2 | 28 | 7 | 700 | 20 | 9 | Yes | Yes | Ordinary cowl | | 75 | 16 | | | No | | 150 rations | |
| 3 | 55 | | 1,800 | 20 | 5 | Good | Good | 2 steam exhaust fans and 2 electric fans. | | 200 | 50 | | | No | | 1,000 rations | Yes. |
| 4 | 95 | | 1,750 | | 2 | Good | Good | Good | Yes. | 200 | 40 | | | No | | 2,000 loaves | Good. |
| 5 | 94 | 2 | 1,725 | 17 | 5 | Yes | Yes | Force system; excellent. | | 100 | 54 | $0.85 | 450 | Yes | $0.415 | 1,500 rations | Ample. |
| 6 | 34 | 3 | 681 | 20 | 5 | Yes | Yes | | | 100 | 15 | | None. | No | | 500 loaves | Poor. |
| 7 | 70 | 11 | 1,760 | 20 | 4 | Yes | Yes | 100,000 cubic feet in 24 hours. | | 150 | 64 | | 1,800 | Yes | | 2,000 loaves | Yes. |
| 8 | 30 | 6 | 800 | | 3 | Yes | Yes | | | 50 | 16 | | 200 | | | 150 loaves | No. |
| 9 | 49 | 4 | 1,020 | 19 | 4 | Yes | Yes | | | 150 | 56 | | 800 | Yes | | 600 loaves | Yes. |
| 10 | 121 | | 1,800 | | | | | Fan houses | | | Ample. | | | | | | |
| 11 | 50 | | 850 | 20 | 2 | Yes | Yes | Doors and windows. | Yes. | 500 | | 0.647 | (1) | {[5] 45.49<br>{[6] 37.32 } | | 400 loaves | |
| 12 | 80–85 | 6 | 1,161 | 14 | 19 | Yes | 1 very poor | 44,595 cubic feet capacity. | | 150 | 92 | | 500 | Yes | | 600 pounds | Yes. |
| 13 | 80 | | 2,700 | | | Yes | Yes | Good | Yes. | 180 | 40 | 1.00 | 1,800 | Yes | .375 | | |
| 14 | 64.47 | | 1,795 | | 5 | Yes | | Good | | | 46 | | 800 | Yes | | 1,800 loaves | |
| 15 | 45 | 6 | 900 | | 20 | Good | Good | | | 100 | 60 | 1.00 | 1,500–2,000 | No | | 2,000 loaves | Yes. |
| 16 | 62 | | 1,308 | | | Good | | Excellent | | 200 | 81 | | 1,800 | No | | 6,000 loaves | |
| 17 | 65 | | 1,358 | | 4 | Yes | Yes; some old. | Wind sails and 45 fans. | Yes. | 800 | 30 | 1.25 | | No | | 2,000 loaves | |
| Chartered: | | | | | | | | | | | | | | | | | |
| 18 | 70 | | | | | | | Exhaust system | | | | {[3] 1.00<br>{[4] .85 } | | | | | |
| 19 | 30 | | 900 | | | | | | | | | | | | | | |
| 20 | 30 | | 1,140 | | | Yes | Good | Good; force and exhaust fans. | | | | [4] .65 | | | | | Good. |
| 21 | 34 | | 1,100 | | | | | | | | | | | | | 400 pounds | |
| 22 | 21.12 | | 580 | 15 | | | Yes | None | | (2) | 45 | | 1,000 | No | | | No. |
| 23 | | | 1,200 | | | | | | | | | | | | | | |
| 24 | 50 | | 1,100 | | | | Yes | Electric fans | | 300 | 108 | | | Yes | | 1,000 pounds | |
| 25 | 89 | | 980 | | | | | | | | | [5] 1.00 | | | | | |

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[1] No troop galley; only one galley aboard.
[2] Only one galley aboard.
[3] First class.
[4] Second class.
[5] Officers.
[6] Crew.

| Number. | Cold storage. |  |  |  |  |  | Electric-light plant. |  |  |  | Hospital. |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Refrigerating apparatus. | Capacity of cold storage. | Temperature. | Capacity of separate cold storage. | Capacity of ice machine. | Ice carried. | Dynamos. | Amperes. | Number of lights. | Search lights. | Capacity of hospital. | Capacity of isolation ward. | Operating room. | Diet kitchen. |
| U. S. transports: |  |  | ° | Tons. |  | Tons. |  |  |  |  |  |  |  |  |
| 1 |  | 2,200 quarters beef |  |  |  | 150 | 2 |  | 285 |  | 12 |  |  |  |
| 2 | Ammonia process. | 1,280 cubic feet |  | 12 | None | 17 | 2 |  | 250 |  | 8 |  |  | Facilities good. |
| 3 | 5-ton ammonia | 1,200 cubic feet |  | 50 | None |  | 2 | 405 | 430 |  | 8 | 6 |  | Do. |
| 4 | "Linde" brine | 210,000 pounds | 22 |  | 1,000 to 1,500 pounds. |  | 3 | 272 |  |  | 60 |  | No. |  |
| 5 | Ammonia brine | 85 tons | 21–40 |  | 150 to 720 pounds. |  | 3 | [2]42 | 1,000 | 1 | 42 | 8 |  |  |
| 6 | Ammonia process. | 50,000 pounds |  | [1]500 | None | 60 | 2 | 150 | 250 | Yes. | 10 | None. |  |  |
| 7 | Ammonia | 19,000 cubic feet | 29 | 100 | 1 ton | 30 | 3 | 675 | 1,157 | 8 | 64 | 24 | Yes | Too small. |
| 8 | Compressed air | 500,000 pounds |  |  |  | 30 | 1 | 60 | 125 |  | 12 | 4 |  |  |
| 9 |  | 4,500 pounds |  |  |  | 40 |  | 400 | 600 |  | 8 |  |  |  |
| 10 | Overboxed; good |  | 25–30 |  | ½ ton |  |  |  |  |  | 24 | 8 | Yes |  |
| 11 | Ammonia | 400,000 pounds | 20 |  | ½ ton, at about $3.50. |  | 2 | 675 |  |  | 250 | No. | Yes | Yes. |
| 12 | None | 65 tons |  |  |  | 35 | 2 | 274 | 386 |  | 12 | 6 |  | Yes. |
| 13 |  | 200 tons | 20–40 |  |  | 35 | 3 | [2]46 |  |  | 56 | No. | No. |  |
| 14 | Brine system | 273 tons | 22 |  | ½ ton |  | 4 | [2]46 |  |  | 56 | Yes. | Yes |  |
| 15 | Ammonia | 12 tons per day | 28 |  | 1 ton | 4 | 2 | 250 | 425 | 1 | 32 | 8 | Yes | Yes. |
| 16 | Compressed air | 360,000 pounds |  |  | 2 tons |  | 3 |  | 800 | 2 | 54 | 12 |  | Yes; steam. |
| 17 | Brine system; ammonia compression. | 90,000 pounds | 26 | 20 | 1,000 pounds | 15 | 2 | 440 |  |  | 32 | Yes. | No. |  |
| Chartered: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 |  | 10 tons | 28 |  | 140 pounds |  |  |  |  |  |  |  |  |  |
| 19 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 20 | None |  |  |  | None |  | Poor. |  |  |  | 6 |  |  |  |
| 21 |  | 14,240 pounds |  |  |  |  | ([3]) |  | 800 |  | 24 | 3 |  |  |
| 22 | Brine circulation | 60,000 pounds | 29 |  | None | 11 | 1 | 150 |  |  |  |  |  |  |
| 23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 24 | Good | 20,000 pounds | 28 | 30 | None | 20 | 3 | 450 |  |  | 18 | 6 |  |  |
| 25 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

[1] Barrels.

[2] Kilowatts.

[3] Insufficient power.

| Number. | Bathing and toilet. | | | | | Employees. | | | | Expenditures. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | Monthly pay roll. | | | | |
| | Bath tubs. | Shower baths. | Closet seats. | Lavatories. | Basins. | Deck department. | Engineer department. | Steward's department. | Other employees. | Deck department. | Engineer department. | Steward's department. | Other employees. | Average monthly expenditures of quartermaster. |
| U. S. transports: | | | | | | | | | | | | | | |
| 1 | 2 rooms, officers. | 2, crew | 28 | 2, troops | 28 | 32 | 31 | 21 | | | | | | |
| 2 | 4, officers | Yes; troops | 4, officers; 14, troops. | Ample, officers; 2, troops. | 20, troops | 38 | 28 | 27 | | | | | | |
| 3 | 1, hospital; 6, officers. | 4, troops; 4, crew. | 48 | Each stateroom. | 3, hospital; 22, crew. | 44 | 55 | 36 | | | | | | |
| 4 | 2, officers | 14 | 72 | | 159 | 53 | 65 | 48 | 2 | $2,395 | $3,055 | $1,770 | $200 | |
| 5 | 6 | 30 | 98 | | 123 | 52 | 77 | 45 | 8 | 2,318 | 3,087 | 1,625 | | |
| 6 | 3, officers | | 10, troops and crew; 3 closets, officers. | | | 43 | 46 | 29 | | | | | | |
| 7 | 2, officers | 2, officers; 12, men. | 53 | | 95 | 52 | 62 | 43 | | | | | | $5,000.00 |
| 8 | 1 room, officers. | 1, crew; none, troops. | 1, officers; none, troops; 6, crew. | None, officers; none, troops. | 1, officers: none, troops. | 39 | 39 | 22 | | | | | | |
| 9 | 2 rooms, officers. | 3, troops | 32, troops | 2, officers; poor, troops. | | 40 | 45 | 25 | | | | | | |
| 10 | | | | | | 49 | 65 | 43 | | | | | | |
| 11 | 10 | | 23 | | 50 | 35 | 39 | 15 | 30 | 1,700 | 2,100 | 710 | | 6,115.95 |
| 12 | 5, officers | 2, troops; 2, crew. | 36, troops; 8, crew; 6, officers. | Ample, officers | 18, troops; 17, crew. | 45 | 61 | 39 | | | | | | |
| 13 | 5 | 21 | 57 | | 101 | 48 | 69 | 46 | | 2,180 | 3,395 | 1,815 | | 6,194.91 |
| 14 | 3, officers | 2, officers; 12, troops. | 68 | | 128 | 51 | 68 | 50 | | | | | | 4,924.00 |
| 15 | 6 | 7 | 70 | 6 | 95 | 43 | 48 | 31 | | | | | | |
| 16 | Ample | Ample | Ample | | Ample | 44 | 52 | | | | | | | |
| 17 | 3 | 31 | 60 | 36 | 36 hand bowls. | 41 | 55 | 40 | 1 | 1,955 | 2,675 | 1,640 | | |
| Chartered: | | | | | | | | | | | | | | |
| 18 | | | | | | | 109 | | 42 | | | | | |
| 19 | | | | | | | | | 42 | | | | | |
| 20 | 2 rooms, 1 tub. | 4 | 11 | 6 bowls | | | | | 42 | | | | 1,740 | |
| 21 | 3, officers | 15, troops | 27 | | 15, troops | 21 | 28 | 20 | 6 | | | | | |
| 22 | 1 | 16 | 29 | 21 bowls | 6 bowls for troops. | 56 | | | | | | | | |
| 23 | | | | | | | | | 48 | | | | | |
| 24 | 6, officers | 6, officers; 24, troops. | 53 | | | | | | 6 | | | | 360 | |
| 25 | | | | | | | | | [1] | | | | | |

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[1] 34 civilians, 7 enlisted.

| Number. | Miscellaneous. |  |  |  |  |  | Animals. |  |  |  |  | General remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Commanding officer's office. | Smoking and writing room. | Library. | Games. | Treasure chamber. | Laundry facilities. | Capacity (stalls). | Location of stalls. | Place for exercise. | Ventilation. | Facilities for cleanliness. |  |
| U. S. transports: |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 |  |  |  |  | No. |  |  |  |  |  |  | Not fit for carrying troops. |
| 2 |  |  |  |  | No. | No. |  |  |  |  |  | Do. |
| 3 | No. |  |  |  |  | No. | Not equipped for animals. |  |  |  |  |  |
| 4 |  |  |  | No. | No. | No. |  |  |  |  |  | Well spoken of. |
| 5 |  |  | Yes | No. | Yes | No. |  |  |  |  |  |  |
| 6 |  |  |  |  | No. | Poor | 464 |  |  |  |  | Not fit as troop ship. |
| 7 | Yes | Yes |  | Yes | No. | Excellent | Not equipped for animals. |  |  |  |  | Excellent. |
| 8 |  |  |  |  |  | No. | None; 60 have been carried in temporary stalls. |  |  |  |  | Rolls badly; bottom foul; unfit for troops. |
| 9 |  |  |  |  | No. | No. |  |  |  |  |  |  |
| 10 | No. |  |  | Yes |  |  |  |  |  |  |  | Rolls badly. |
| 11 |  |  |  |  |  | Yes |  |  |  |  |  |  |
| 12 |  |  |  |  | No. | No. | None |  |  |  |  |  |
| 13 |  | No. |  | No. |  |  |  |  |  |  |  | Good as to police and sanitation. |
| 14 |  |  |  | Yes | Yes | No. |  |  |  |  |  |  |
| 15 | Yes | Yes | Yes | Yes | Yes |  | Not equipped for animals. |  |  |  |  |  |
| 16 | Yes | Yes |  |  | No. | Yes; good | do |  |  |  |  |  |
| 17 |  |  |  |  | Yes | No. |  |  |  |  |  |  |
| Chartered: |  |  |  |  |  |  |  |  |  |  |  |  |
| 18 |  |  |  |  |  |  | 850 |  | No. |  | Not satisfactory. | Excellent record, but does not appear well fitted for animals, and stalls too wide and too short. |
| 19 |  |  |  |  |  |  |  | Main and between decks. | No. | Good | do | Satisfactory. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | | | | No | No | | do | No | Open air and forced. | | Rolls much; stalls too long; condition good. |
| 21 | | | | | | | | | | | | |
| 22 | | | | | Yes | | | | | | | |
| 23 | | | | | | | | | No | Forced and exhaust. | No | |
| 24 | | | | | | | | | | | | |
| 25 | | | | | | | | Main and between decks. | | Forced draft; 2 6-foot fans. | Not satisfactory. | Rolls badly. |

# APPENDIX C.

## MILITARY ACADEMY.

War Department, Inspector-General's Office,
*Washington, June 25, 1900.*

Sir: I have the honor to submit the following report of an inspection of the Military Academy, West Point, N. Y., made in compliance with instructions from the Secretary of War, dated May 8 and 15, 1900, copies of which are inclosed. Accompanied by Maj. Thomas T. Knox, inspector-general, I left this city May 14 and arrived at West Point at 5.36 p. m., on the same day, after having been joined, while en route, by Maj. J. M. K. Davis, assistant to the inspector-general, Department of the East. After being received with the proper military honors, the inspection of the Academy was commenced on the following day, the officers assembling the first evening.

The Superintendent had already been furnished by another department with a copy of my orders (which included a letter to a former Superintendent), and though the corps of cadets was not explicitly mentioned, he courteously invited a full inspection, which greatly facilitated the work within the limits understood to be desired. The selection of the Superintendent from the line may have important effects.

The programme for practical exercises and inspection, a full copy of which is herewith submitted, was briefly as follows:

May 15: Review in full dress; review and inspection in field equipment and intrenching tools; light battery, mountain gun, siege rifle and mortar, machine gun, seacoast and standing gun drill; target practice, second and fourth classes. The exercises, so far as executed, were very satisfactory.

May 16: Exercises in castrametation on the parade ground, and shelter trench exercises on the maneuver terrain. The shelter trench exercise was eminently practical and very instructive. In seventeen minutes the line was intrenched and the men well protected. The ground was hard and rocky.

May 17: Exercise in attack and defense. This exercise was well executed, and natural cover was taken advantage of, but in some cases the cadets exposed themselves unnecessarily.

May 18: Battalion drill and escort of colors.

These exercises were executed in a very soldier-like and generally satisfactory manner, with precision and snap, and illustrate the thoroughness with which the commandant of cadets, Lieut. Col. O. L. Hein, conducts his department, with the aid of accomplished assistants.

The cavalry drill, too, under command of the cadets, was very satisfactory. The movements were well executed, the gaits being generally rapid. A thorough knowledge of cavalry drill was evident. It was observed the cavalry officer present had a breast strap on his horse, which is not authorized by the regulations. Excluding the curriculum from inspection was supposed not to preclude these exercises.

### EARLIER HISTORY.

The Academy was established by an act of Congress approved March 16, 1802, and formally opened July 4 of the same year with ten cadets. Previous to this time a few cadets of the corps of artillerists and engineers had been instructed at West Point. The earlier struggles of the

Academy to gain a foothold illustrate the marked opposition that has attended almost every beneficial innovation. In 1810 the institution was seriously threatened by the opposition of the then Secretary of War, and in 1811 it practically ceased to exist, and at one time was left without a single instructor or cadet. In 1812 Congress took the matter in hand and enacted important legislation which in a great measure reorganized the institution; but it was not until 1817, when Maj. Sylvanus Thayer was appointed Superintendent, that the Academy began to flourish. His efficient administration, which lasted until July 1, 1833, marked a new era in the history of its development. Major Thayer, who was justly called the "Father of the Academy," laid the foundation that has made this place celebrated and raised it to the foremost rank in the military schools of the world; and it richly deserves the admiration bestowed upon it here and abroad.

The institution has grown greatly in the confidence of the nation and the extent and importance of the work it performs since its precarious struggles of nearly a century ago, and the methods and principles instituted by Major Thayer are recognized as its characteristic features, which have been the delight of those who are most interested in the Academy.

### PRESENT CONDITION.

The Superintendent of the Academy, Col. A. L. Mills, and the commandant of cadets, Lieut. Col. O. L. Hein, are most efficient officers and enthusiastic in their work, which they continue with the same progressive spirit that was shown by their predecessors, and an earnest desire pervades the entire corps of officers and instructors to put forth their best efforts in maintaining and further improving the proficiency heretofore attained. The condition of the post and Academy and of the several departments connected therewith bear witness to the efficient and wise administration.

The buildings, which number more than 160, of various designs, structures, and uses, were generally in excellent condition and police, and further improvements were still going on. Since the last inspection of this historic place by an officer of the Inspector-General's Department in October, 1897, many changes and improvements have been made. Among those recommended by the inspector in reports of prior inspections, and subsequently consummated, are the following:

Removal of a number of old buildings; better and more abundant quarters for the officers; steam heat for the cadet barracks; establishment of a crematory for offal; better and more horses for instruction purposes; improved cold storage; removal of old and useless fences; better accommodations for enlisted men; better bathing facilities; improved hospital facilities; and remodeling of library.

The improvements that the post has witnessed during the past decade are seen on every side and have not only affected buildings, grounds, roads, and trees, but also health and comfort, and practical and theoretical instruction; and even the uniform has not been left unaffected in the progressive movement, the most noticeable being a change in the dress hat, overcoat, and shoes, and the adoption of a flannel fatigue coat, campaign hat, cadet-gray leggings, and class stripes on the coat cuffs. Intrenching tools (spades and picks, attached to canvas cartridge belts) were introduced in July, 1898, as was also the field equipment, consisting of shelter tent, rubber blanket, haversack, meat can, knife, fork, and spoon, tincup and canteen.

## RECENT CHANGES.

One of the most important changes that has recently been introduced by the Superintendent of the Academy, Colonel Mills, at the suggestion of the commandant of cadets, Lieutenant-Colonel Hein, is an increase in the practical work without encroaching upon the time allotted for academic instruction. This change promises excellent results, as it will equip the young officer to perform intelligently his military duties on joining his regiment instead of having him largely learn the practical side of his profession after joining. And it will give those cadets who may fail to graduate, or leave the Academy for other reasons, sufficient practical knowledge to assume the functions of a subaltern in emergency cases, which may result in great advantage to the Government. The importance of this innovation can hardly be overestimated, and it is especially opportune at this time, when so many of our regiments are serving in the field and those at home are largely filled with recruits, and the young officer must rely upon his own knowledge and judgment. The lack of an adequate number of well-instructed officers is now seriously felt in the army perhaps by supplying officers to the volunteer regiments, though there were about 50 additional second lieutenants just previous to the Spanish war.

In order to effect the change, it became necessary to rearrange the entire programme of summer work and give the cadets more opportunity to exercise the command and responsibilities devolving upon officers and noncommissioned officers. Troop parade was suspended, except on Sundays; guard mounting postponed until after evening parade; drill periods changed; an entire day of each week reserved for a practice march combined with field exercises; all privates of the third class were made to act as noncommissioned officers, and those of the first class as officers; more time and attention were given to exercises in applied and minor tactics on varied ground; and the entire practical instruction made more progressive and extended, covering all the duties usually expected from line officers at military posts, without curtailing the time for theoretical instruction, or adding to the time heretofore devoted to practical work.

Reiteration of well-mastered drill is not allowed to absorb the time and prevent other important practical instruction, and very recently practical instruction in mountain gun and machine-gun artillery has been added. The scope of this work seems sufficiently wide and well selected to engender confidence and prepare the graduate in every way for his position, and he will find his knowledge of these duties of decided value to him when he joins his regiment.

Recent additions to the theoretical course consist of instruction in security and information for the fourth class; also school of cannoneer (artillery regulations) and so much of the infantry regulations as pertains to school of company; and a complete course of rifle target practice and revolver practice was introduced in summer of 1898, and experimental drills and improvements have been introduced.

More attention is also given to legibility of handwriting, and cadets are now required to practice vertical writing.

Another progressive and perhaps equally valuable change, which has an important bearing upon military efficiency and soldierly deportment, and is of special moment to the cadet, is the introduction of an efficiency mark for discipline and the performance of military duty to offset or counteract the demerit marks, and give the cadet an opportunity to purge himself of a mark that would cling to him throughout his course. Of this improvement the Superintendent of the Academy says:

> In the past for many years, in the final merit roll, the only index of the purely soldierly qualities of the cadet has appeared under the heads of "Discipline" and "Drill regulations," the former having a weight of 200, determined only by the amount of demerit the cadet received during the last two years at the Academy, and the latter a weight of 100, found from the value given to recitations in "Drill regulations." By the change these qualities are expressed in the final merit roll under the heads "Conduct," with a weight of 125; "Drill regulations" and the "Service of security and information" (recitations in), a weight of 115; "Military efficiency," 130; "Soldierly deportment and discipline," with a weight of 20; the total weight for the subjects being 390, as against 300 in the past. Conduct as now determined is based upon the proposition that the longer a cadet is at the Academy the better his behavior should be and the fewer his demerits. It is given a weight in the standing of each class, being greatest for the first class and decreasing proportionately for each class below the first, the final standing in conduct being computed from the standing in each year.
>
> This recognition of military efficiency and soldierly deportment has already had a marked effect on the zeal and intelligence with which duty is performed. The members of the first class are detailed in turn according to roster for the various duties as officers at drills, parades, tactical exercises, and as officer of the day, etc., and are marked on their performance of these duties. In this way each member of the class is given credit for his efficiency in the performance of military duty and his display of qualities in the make-up of an officer. The mark for "soldierly deportment" is determined by the combined personal estimate of the commandant of cadets and each of his assistants, together with recorded delinqencies affecting soldierly deportment and discipline.

These changes seem in the right direction, and not only encourage the cadet but give him an opportunity to bring out his best qualities as an officer, and give him confidence and self-reliance. The results are being watched with great interest by the officers of the academy, and, it is believed, will exert a wholesome influence upon both the young officer and the rank and file.

The introduction of well-considered innovations tends to prevent the stagnation which is one of the greatest evils to be dreaded in military life. Attention is now kept alert, and a lively interest in current local affairs is evident throughout the command.

On the 10th of each month the cadets are arranged into three conduct grades by classes according to the number of demerit received during the preceding month during which they have been present according to the following scale:

| Class. | Number of demerit per month. | | |
|---|---|---|---|
| | First grade. | Second grade. | Third grade. |
| 1 | 3 or less | 4 to 7 | Over 7. |
| 2 | 3 or less | 4 to 7 | Over 7. |
| 3 | 4 or less | 5 to 9 | Over 9. |
| 4 | 5 or less | 6 to 10 | Over 10. |

And they are accorded certain additional corresponding privileges.

Under this arrangement the cadets of the various classes present during the month of April were given the following grades:

| Class. | First grade. | Second grade. | Third grade. |
|---|---|---|---|
| 1 | 19 | 18 | 17 |
| 2 | 24 | 25 | 26 |
| 3 | 26 | 26 | 19 |
| 4 | 70 | 36 | 23 |
| Total | 139 | 105 | 85 |

The battalion of cadets was never so large nor better nor had such advanced and practical outdoor instruction as now.

The aim and purposes of the academy are well understood; and theoretical and scientific instruction is happily blended with practical work, so as to enable the cadet upon leaving the academy to discharge at once the full duties of his chosen career in all its ramifications. The course of study has been constantly improving, and the demands are more exacting and the graduates are better equipped to assume the functions and responsibilities of their profession than ever before in the history of the institution.

### THE COMMAND.

The post and academy are under the immediate command of Col. A. L. Mills, who is a most efficient officer and well qualified for the important duties to which he has been assigned.

His command comprised 64 officers, professors, and instructors, 336 cadets, and 395 enlisted men, consisting of noncommissioned staff, band, company of engineers, and several detachments, of which number 1 officer, 9 cadets, and 7 enlisted men were absent from the post at date of inspection. A copy of the consolidated morning report of May 19, 1900, and of the return of troops, giving detailed information, is herewith submitted. There is an officer to about 5 cadets or 6 enlisted men.

The quota of cadets lacks 47 of the full number, and an equal number of recruits is required for the full complement of enlisted men, mostly for the company of engineers. Since the last annual inspection, Lieutenant Rivers, the post adjutant, had 90 applications for enlistment, of which number 75 were accepted and 15 rejected, principally for impaired vision and insufficient development. Among the accepted recruits were 40 of American and 35 of foreign birth, the latter mostly Germans. There were no desertions.

### ADJUTANT'S OFFICE.

The adjutant's office was in good condition, and its records properly kept and up to date. Lieut. William C. Rivers, First Cavalry, who is the adjutant of the Military Academy and of the post, is a very efficient and painstaking officer and well qualified for his present duties.

He has also charge of the band and field music of the post. The strength of the band has been temporarily increased by the addition of 16 privates, but it seems that more satisfactory results would be obtained by reorganizing the band under legal authority on a permanent basis and readjusting the salary of the musicians as recommended by the superintendent in his last annual report.

### GROUNDS.

The grounds are generally in very good condition, but some of the roads need remetaling in places; and it would add to the beauty of the place if some of the old wooden fences were replaced by iron ones.

### BUILDINGS.

The buildings are, with few exceptions, generally in good condition. The number of quarters for officers is not sufficient. Among the officers to report for duty in August next are so many that are married that it will be necessary for two families in some instances to occupy quarters with but one bathroom, kitchen, etc., and only suited for occupancy by one family. This difficulty will be further aggravated by the increase of the corps of cadets as contemplated in present army legislation, as the increase will necessitate a greater number of instructors. The roof of the academic building, which is of an asphalt preparation, is reported as cracking badly and therefore causing much damage to the interior by water leaking through. A new roof seems a necessity.

An electric-lighting plant seems at the present date indispensable for the needs of the post. The cadets should have the best light possible for studying, and all buildings and streets should be well lighted. At present the only electric lighting is in the Cullum Memorial Hall.

In this connection the following is quoted from an article in the Scientific American of June 23, 1900, under the caption, "The United States Military Academy," by Colonel Larned:

> There have been three important periods of construction in the history of the academy. The first, from 1836 to 1841, includes the chapel, the academy building, recently torn down, ordnance laboratory, and the library. This latter, a castellated and buttressed building with a dome, determined the style of the barracks erected later. The second, from 1851 to 1858, comprises the cadet barracks, mess hall, riding hall, a soldiers' hospital, and two sets of barracks. The third, begun in 1890, sees completed the new academic building, gymnasium, a memorial hall, a renovated library, a new water supply, some few officers' quarters, a soldiers' hospital, barracks and quarters, and a battle monument, with other minor changes. Although in this last period much has been done, there remain many of the buildings of the first and second period in an inadequate and obsolete condition, irrespective of any increase in the functions of the institution. Any proposition looking to a considerable enlargement of the academy involves at once a review of the whole establishment, and invites at the same time a consideration of the scheme of arrangement throughout with a view to its systematic renewal.

The improvement in furniture and conveniences about the cadet barracks show consideration, and the cleanliness, from basement up, is proverbial. The shoe-blacking facilities are of the simplest character.

### CULLUM MEMORIAL HALL.

This handsome and imposing edifice was erected under the provisions of the will of Bvt. Maj. Gen. George W. Cullum, who, himself a graduate and at one time superintendent of the academy, bequeathed $250,000 to the Government of the United States for the purpose. It was his will that this hall serve as a receptacle of statues, busts, mural tablets, portraits of distinguished deceased officers and graduates of the Military Academy, of paintings of battle scenes, trophies of war, and such other objects as may tend to give elevation to the military profession.

The corner stone was laid April 15, 1896, and the building was completed December 21, 1898. Quite recently the interior decorations and lighting were completed, for which Congress appropriated $25,000, and on June 12, 1900, the building was dedicated under appropriate ceremonies. It is a massive, rectangular, two-story structure, built of granite and located upon the eastern border of the general parade ground overlooking the Hudson. On the first floor is an assembly hall for social entertainments, a handsome reception room, and dressing and service rooms. On the second floor is the main hall, which is beautifully proportioned and richly decorated and has a length of 107 feet by a width of 69 feet, terminating at the north end in a stage matching in artistic design the magnificent ceiling and fine decorations around the walls. The hall is splendidly equipped and meets a long-felt want.

## DOCKS.

There are three docks. The south dock, used as a landing for passenger boats and by necessity for certain classes of freight boats, is in very good condition.

The coal dock needs an addition such as will protect boats unloading from being driven ashore by the ice.

The north dock is in a positively unsafe condition. The fender piles all need replacing. The deck planks are rotten. About 20 piles need replacing under dock, and the string pieces and timbers above water need renewing generally.

## WATER SUPPLY.

The water of the post is obtained from three different sources, Round Pond, Cascade Brook, and Crow Nest Brook. A fourth source, Sinclair Pond, has been condemned and no longer forms part of the water system. Round Pond is situated in the hills about 5 miles distant from the post proper on land owned by the United States, and has an estimated capacity of about 48,000,000 gallons; but owing to the location of the intake and the impurities found in the water below a 20-foot depth, this pond can be utilized to the extent of only about 20,000,000 gallons, or less than 40 days' continuous supply; and when drawn down to its practicable limit it will require about two years to fill it again. Its supply is therefore uncertain.

Cascade Brook is about 3 miles from the post proper, partly within the limits of the reservation and partly on private grounds, and has an estimated capacity of 117,000,000 gallons per annum. It is dry during part of each summer, and at other times it is a mountain torrent, causing a large part of the water to go to waste for lack of proper storage facilities.

Crow Nest Brook is on the reservation in a ravine, and has been estimated to discharge about 80,000,000 gallons during winter and spring, but is dry during the summer months. It also wastes a large amount of water during freshets for lack of storage facilities.

There are two reservoirs within the reservation: Delafield, with a capacity of 9,000,000 gallons, and Lusk, recently constructed, with a capacity of about 95,000,000, of which only about 40,000,000 are fit for use. Below the former there are a water house and a filter bed with a filtering area of 60 by 30 feet, and below the latter there are two filter beds each with an area of 96 by 63 feet, one of which, it is reported, will be ready to operate within a month. It is contemplated to connect Crow Nest Pond with Lusk reservoir by an 8-inch main.

The water is reported excellent after filtration, and adequate in seasons of ordinary rainfalls; but as the consumption averages over 500,000 gallons daily, and is increasing, the time will come when an additional supply will be needed. Considering the uncertainty of Round Pond and the fact that the head waters of Cascade Brook lie beyond the control of the United States authorities, it seems advisable to secure an additional supply. Long Pond, which is only one-fourth of a mile south of Round Pond, will, it is reported, give an abundant supply of water for all future needs, and should be acquired at an early day. It is estimated that the land, pond, water rights, and necessary pumping plant would cost about $100,000 if acquired now.

Suitable and abundant water is such a vital question that it is mentioned, though prompt attention is doubtless assured.

### CADET MESS.

The mess of the cadets is under the charge of Maj. Charles B. Hall, Second Infantry, who is the treasurer of the Military Academy and quartermaster and commissary of cadets, and seems to perform his duties in a conscientious and efficient manner.

The mess hall building was in excellent police, but it is inadequate for its present use, and the appliances for cooking and washing dishes are antiquated and should be replaced by more modern and labor-saving methods. The dining room is comfortably appointed, but too small. The kitchen and accessories are old and in bad repair; and all the work connected with the establishment is still performed by hand. The bakery was in better condition, but its facilities are old, and the method of handling garbage requires too much labor.

The cadets' mess building also contains the mess room for the bachelor officers, which makes it cramped and unsuitable. Arrangements, it is understood, are being made for a special building for the bachelor officers' mess, and when this is done the cadets' mess building should be remodeled and supplied with steam cooking apparatus and other approved appliances, which are badly needed. The cold storage was the most modern convenience connected with the establishment.

The food was very satisfactory in variety and quality and well cooked, and the bread of excellent quality.

Major Hall, who disburses the funds accruing from the deposits and pay of the cadets, had about $3,000 of this money in his personal possession, which, it would seem, in the interest of good administration, should be deposited in bank.

### GYMNASIUM.

The gymnasium building is an attractive well-built stone structure, in excellent condition, and fully equipped with all modern appliances. Its size is sufficient for the present number of cadets, but if the corps is to be increased in number the building should be proportionately enlarged, which can be done at a moderate expense by extending it to the rear.

The system of physical training embraces gymnastics, setting-up exercises, fencing, and swimming, and has reached an admirable state of perfection and order under the able direction of Mr. Koehler, who is also master of the sword and an excellent instructor. The old method of detailing members of the third class in turn as instructors in physical drill of the new cadets has been abolished, and their physical training is intrusted to the regular instructor assisted by the new cadet instructors of the first class.

A systematic progressive course of training is pursued from date of admission to the Academy. Complete measurements are taken and special efforts made to train in the direction of deficient development, stress being laid upon securing a generally uniform development of the body rather than putting a few athletes in a high state of training.

The results have been very gratifying and are evidenced by a uniformly fine carriage and fine appearance of the cadets.

The master of the sword, Mr. Koehler, occupies an anomalous position in his capacity as civilian instructor of soldierly accomplishments. The Superintendent speaks in the highest terms of his important and and efficient service, and has urged repeatedly that he should be given well-deserved military rank and authority.

### LIBRARY.

The library is under charge of Prof. Peter S. Michie, of the department of natural and experimental philosophy, and he is assisted by Otto Plate, Ph. D., who is a graduate of the University of Strassburg and has been employed as assistant librarian since November, 1893.

The library building is at present being renovated and enlarged, and when the work is completed, which it is understood will be within the next six or seven months, will be able to accommodate 150,000 volumes. It will be practically new and fireproof, and contain one main hall and two reading rooms on the first floor, and two stack rooms on the second floor. The arches sustaining the floor are of special form, and the reconstruction in progress is interesting. The delay in beginning the work of reconstruction is due to the fact that the heavy advance in the price of building material caused the proposals of the competing bidders to be considerably in excess of the amount appropriated by Congress, and the work of renovation finally had to be undertaken by the Academy itself.

There are at present about 44,524 volumes and 7,400 pamphlets in the library, classified according to the estimate furnished as: Military, 30 per cent; mathematical and scientific, 10 per cent; light literature, 15 per cent; biographies and historical, 30 per cent, and periodicals, 15 per cent. All books most likely to be in demand have been stored during the reconstruction period in the academic building, where they are of easy access. Books may be drawn from the library for one week at a time, but their selection is limited to about 10,000 volumes. Most of the cadets take advantage of this privilege, and they read about 50 per cent of the issue books, and the other 50 per cent are read by the officers and their families and other occupants of the post—particularly soldiers. Authors in fiction (Kipling, Crane, Churchill, Merriman, Ford, and Wallace), military authors (Jomini's Napoleon, Sargent's Napoleon's First Campaign, and Crane's Fifteen Decisive Battles), and scientific books (descriptive geometry, electricity, telephone, etc.), are in greatest demand.

The Academy has an annual appropriation of $2,000 for books, periodicals, and binding, and $200 for furniture; but last year there was an increase of $200 for binding periodicals. Purchases are made in open market by the Superintendent on the recommendation of a board composed of the professors of philosophy, chemistry, engineering, modern languages, and drawing, though quite a number of books are presented to the library. During the past year the increase was about 1,500 volumes, of which 500 were gifts—such as public documents, etc.

Professor Michie is quite anxious to build up the military and historical sections of the library, but the limited appropriations are a serious handicap in the matter. Such books are of great importance to the student of military science, and an increase in the annual appropriation for the purchase of books is recommended. The increased space will accommodate treble the number of volumes at present in the library, and also give room for the display of the large number of maps and charts, which were heretofore almost entirely unavailable on account of the cramped condition of the building.

The cataloguing by card of the books and pamphlets of the library has recently been completed by Dr. Plate, the assistant librarian, who seems a most efficient and valuable librarian, and is highly spoken of by Professor Michie.

A small select library has been placed in the dialectic hall to serve as an example of a small professional library which a young officer desirous of keeping abreast of his profession should acquire. A list of military works, taken from one published by Lieutenant-Colonel Wagner, has also been published as an aid to cadets who, after graduation, may desire to accumulate a useful military library without an unnecessary expenditure of time and money. This is another indication of the thoughtful care exercised in every department to aid and direct the cadets, not only in their present surroundings, but afterwards.

### CADET LAUNDRY.

The laundry, which is run by steam, was established in 1865, rebuilt in 1869 when it was destroyed by fire, and enlarged in 1888. Its work has since outgrown its capacity and it needs further enlargement; a new and larger mangle is required and a new drying room on the second floor. The work performed at the laundry averages over half a million pieces annually. Cadets and officers are charged a moderate amount for the work done at the laundry—just enough to make the plant self-supporting. There is no restriction in the amount of clothing that may be sent to the laundry, and there is consequently a a wide range in the amount of the bills of the individual cadets. The employees are paid out of the receipts. Complaints have occasionally been made of the laundry work, due, it is reported, to the difficulty in securing a sufficient number of skilled employees, but the general indications are of much good work well and reasonably done.

### HOSPITALS.

Cadet hospital.

This hospital is under the charge of Maj. J. M. Banister, surgeon, U. S. A., who has been at West Point since October 27, 1898, and he seems to be admirably suited for the position. The hospital was in excellent condition and police throughout, but is not yet provided with an isolation ward and is generally considered inadequate in accommodations for patients.

The operating room, which has but recently been fitted up with the most modern appliances, deserves special mention for its elegance in appointments, completeness of details, thorough equipment, and extreme cleanliness and neatness. It is airy and well lighted and will compare favorably with the best-appointed operating room of any of the public institutions in the country. It was a pleasure to inspect it. The latest and most modern appliances in the way of sterilizers, cabinets, operating table, etc., were furnished by the medical department, and over $2,000 were expended during the year in fitting it up.

During the eighteen months Dr. Banister has been in charge, he has performed 82 surgical operations, including 15 for the radical cure of hernia, 6 for appendicitis, 2 amputations of the leg, 16 operations for the radical cure of varicocele, several for phimosis, removal of necrosed bone, etc., without the loss of a single patient, each operation being followed by complete recovery. Dr. Banister has made a special study of ophthalmology and, in addition to the operations above mentioned, he has treated 235 official refraction cases, of which 37 occurred among officers, 127 among cadets, 17 among enlisted men, and 53 among members of families and employees. He reported that the prevalence of eye strain among the cadets has been a source of trouble, and, believing that the lighting of the cadet barracks is at fault, has suggested that the gas-burners suspended above the table in the center of each room be replaced by a Welsbach burner in the form of a drop-light with green porcelain shade. I concur in this suggestion, and furthermore believe that it would be a saving in gas, which is manufactured at the post and charged to the cadet at the rate of about 35 cents per month. The light furnished has heretofore excited remark at the Military Academy. The distance of the light from the books, as the square of the distance is involved, should also be considered; and perhaps eye shades would be beneficial.

The subject of enlarging the cadet hospital by building a south wing corresponding to the present north wing, as contemplated in the original plan, and adding an isolation ward has been repeatedly urged, and the inadequateness of the present hospital accommodations was severely felt during the two epidemics of scarlet fever and influenza which occurred last year, and emphasize the necessity of early remedial action. In this connection the following is quoted from the report of the surgeon of last year:

> There is no isolation ward in the building for the treatment of infectious diseases, and no means of caring for suspicious cases, except in the general wards. I called attention to this in a previous report to the superintendent just before the meeting of the Board of Visitors in June, and then made the statement that if an epidemic of some serious infectious disease, as measles, scarlet fever, or diphtheria, should attack the corps of cadets matters would assume a very serious aspect, owing to our limited accommodations for such cases at the cadet hospital.
>
> The calamity referred to has befallen us, and the corps of cadets is now threatened with a serious epidemic of scarlet fever. There are nine cases of this disease at present in the hospital, and we are compelled to place them in a room intended for convalescents, with no sewerage or water connections. If a few more cadets should have the disease there would be no room in this hospital for them. I earnestly recommend the construction of a detached building in the rear of the cadet hospital for the treatment of infectious diseases. Such a building should contain two wards (one for definite cases of infectious diseases and one for suspected cases), together with dining room, kitchen, attendant's room, and water-closets. It would be manifestly out of the question to put suspicious cases in the same ward with well-marked cases of contagious disease, as such action would almost certainly cause infection of the former, if not already infected; and, on the other hand, it would on obvious grounds be dangerous to the other patients to place these suspicious cases in the general wards.
>
> We have been compelled to run this danger during the present invasion of scarlet fever in so far as the general ward has been concerned.

Nothing has been done since these conditions were reported, and a recurrence of an epidemic might not terminate as fortunately as that of last year, so it seems some precautionary measures are absolutely necessary. The letter books kept at the hospital were not indexed.

The cost of the hospital to the cadet may have attracted attention. In other matters also the expenses weigh heavily upon the individuals, especially during the first year and furlough year and when graduating. Thrift and economy and avoidance of debt is doubtless taught. Perhaps bearing other items, like the iron bunks, upon the returns, or making the money allowance equal that of naval cadets, would insure much-needed relief.

A copy of the bill of fare served at the hospital for the first six days of May is submitted herewith.

Soldiers' hospital. This hospital is under charge of Asst. Surg. F. R. Kemp, U. S. A., who has been on duty here for about eight or nine months. The hospital-corps detachment, which presented a good appearance, consists of 2 stewards and 7 privates. There is also a matron. Everything in and about the hospital was in thorough police, and instruments and supplies in excellent condition. The ambulance is of the old style, but serviceable and fully equipped. There were 15 patients in the hospital and 4 sick in quarters at date of inspection.

The hospital is in need of painting inside and out, and the cellar of the hospital steward's quarters is reported damp, and should be repaired.

### COMPANIES AND DETACHMENTS.

Company E, Battalion of Engineers. This company is commanded by Lieut. H. Burgess, Corps of Engineers, and consists of 105 enlisted men, which is 45 less than its authorized strength. The barracks of the company are entirely too small for the authorized strength of 150 men, and even with the present number, despite the fact that 22 men of the company are married and sleep out of quarters, the garret has to be used as a dormitory, though it is hardly fit for that purpose.

The barracks were in excellent police, and all regulations and orders referring to arms, clothing, and bedding are carefully carried out. The instruction and behavior of the men seemed very good.

Cavalry detachment. This detachment is commanded by Capt. Geo. H. Sands, Sixth Cavalry, and has a total enlisted strength of 76 men, who are primarily used for the instruction of the cadets. They have but little opportunity for drill, and principally act as grooms for the horses belonging to the academy, and as drivers for the light-artillery drills, care for the guns, harness, and equipment required for drills and cavalry exercises of the cadets, and perform guard and patrol duty. Perhaps it would be advantageous to assign a battery of light artillery to this post, and relieve the cavalry detachment from all duties connected with light-artillery drills.

The barracks and stables were in excellent police, and everything seemed to be in very satisfactory condition. The stable should have an addition which could be used for new horses for purposes of observation and also for sick animals. There is no veterinary surgeon at the post.

Horses. The cavalry detachment cares for 99 public horses, nearly all of which require weeks of training before they can be used by the cadets. The mounts are generally unbroken to the saddle. Quite a difference was noted in the color and age of the animals, there being no less than seven distinct colors among them, bay predominating; and their ages ranged from 6 to 19, and averaged about 9 years. The difference in height was less noticeable, the smallest being 15½ and the tallest 16 hands high. In 1893 in one regiment of cavalry a difference of several hands was reported in the height of horses, the extremes being nearly 12 and 17 hands. The improvement generally has been great in recent years and should be carefully maintained. When supplied with both artillery and cavalry horses, better training and results will be feasible. The pulling and leaping muscles and type of animal are so distinct that it is a pity to habitually mix the demands made upon such horses.

Army-service detachment.

This detachment numbers 129 enlisted men. They are not armed or equipped as soldiers, but are enlisted as clerks, mechanics, school teachers, musicians, teamsters, and laborers, and work eight hours per day. Until April 26, 1898, these men received extra-duty pay varying from 25 to 50 cents per day, according to the nature of the work performed by them. The loss of this extra-duty pay inflicts great hardship upon many of them; and their length of service and valuable services rendered in their various lines of occupation warrant a return to the status of extra pay that existed for fully half a century prior to April, 1898.

Everything in and about the quarters of these men was in excellent condition. A convenient feature connected with the porches of the barracks consisted of a series of lockers for storing the working clothes of the men who sleep in the barracks.

Ordnance detachment.

This detachment is under Capt. O. B. Mitcham, of the Ordnance Department, and consists of 13 enlisted men, who perform duties of a mechanical order connected with target, ammunition, and other ordnance material, and are present at all cadet drills where ammunition is used or mechanical maneuvers practiced. The detachment presented a very good appearance, and their barrack, store rooms, and shops were in excellent order and police.

## ORDNANCE DEPARTMENT.

This is under charge of Capt L. L. Bruff, of the Ordnance Department. There is no ordnance-sergeant at the post.

The armament consists of one 8-inch B. L. rifle, mounted on an A. R. fire barbette carriage; four 5-inch siege rifles; two 7-inch siege howitzers, mounted on barbette carriages (wheel); one 12-inch steel mortar, carriage model of 1891; six 7-inch steel siege mortars, carriage model of 1895; six 8-inch converted rifles, and one 8-inch, five 10-inch, and one 15-inch smoothbore guns. The converted rifles and smoothbore guns are mounted on old-style barbette carriages, except the 8-inch smoothbore, which is unmounted. There are also 12 field guns, 1 Cohorne mortar, 5 Gatling, and 1 Gardner gun; and 1 each of the Maxim automatic (caliber .45), Hotchkiss, Nordenfelt and Maxim semi-automatic (all 3 pounders), and 1 Driggs-Schroeder (6 pounder) pattern. These rapid-fire guns are not carried on the ordnance return, but are reported as the property of the academy.

The following defects were noted at inspection of machine-gun battery: Two Gatling guns, caliber .30, mounted on model 1895 carriages. Traversing clamp defective, likewise clamp on elevating lever, and the mechanism for securing the cap squares not satisfactory. At the sea-coast battery it was noted that the traverse circle of 8-inch B. L. R. was not graduated.

The battery used in the instruction of the cadets is in many respects just such a battery as might have been expected a decade or two ago.

It has not kept abreast of the progress of seacoast artillery made in the past five years, and no depression position finder has been installed, though the high site lends itself with peculiar fitness to its use.

A modern battery complete in all its details and furnished with all modern appliances should be provided. The modern coast artillery is a comparatively new and progressive branch of our defenses, and as many of our artillery officers have not yet had the opportunities of thorough instruction, it would seem advisable that the cadets should be fully instructed.

An additional magazine for storing filled shells, rockets, primers, and fixed ammunition seems needed, as the ordnance officer, under present conditions, is compelled to place them in the powder magazine, contrary to regulations.

The ordnance museum is very interesting and instructive. It would seem in every way beneficial if under similar skillful direction every agricultural college or institution where an army officer is detailed was given a collection from the obsolete articles needlessly crowding certain arsenals and now to be disposed of.

## SUPPLY DEPARTMENTS.

Quartermaster's department.

The quartermaster of the Military Academy is First Lieut. M. H. Barnum, Tenth Cavalry, and he is also the post quartermaster and commissary, and in all the positions held by him seems thoroughly competent and energetic. He is assisted by Post Q. M. Sergt. Frederick Reissman, who is well spoken of.

The civilian employees, comprising clerks, master of the sword, teacher of music, assistant librarian, engineers, firemen, and others of a mechanical or technical character number 33, at an aggregate compensation of nearly $2,800 per month.

The transportation consists of 169 horses and mules and 40 vehicles and several handcarts. The animals seemed well cared for and the department in excellent condition.

Additions and improvements to buildings were made during the past year at a cost of about $35,000, and included officers' quarters, cavalry stables, cadet hospital, engineer barracks, refrigerating plant, crematory, and new kitchen.

Subsistence department.

The commissary department is located in an old storehouse which has been converted for the purpose and is not fit for its present use. Its location is also inconvenient, being remote from some of the barracks and most of the quarters. A new storehouse with the necessary conveniences should be provided and located at a more central point. The department is efficiently managed by Lieutenant Barnum and Com. Sergt. Frederick Meister, who has an excellent character and has been over twenty-five years in the service.

The bakery building is too small and not suitable; the walls are spreading and it is in a bad state of repair and objectionably located, being in the immediate vicinity of the water-closets of the engineer company. One of the ovens also is unserviceable. It would seem to be economy to replace the present bakery by a model building, which would not only meet the needs of the post, but also serve as an object lesson to cadets.

### CONCLUSION.

In addition to the needs of the post mentioned in the report, covering enlargement of the engineer company barracks, new roof for the academic building, new post bake house, addition to stables, assignment of light battery, modern battery for instruction purposes, new north dock, new hotel, more officers' quarters, increased water supply, electric-light plant, remodeling cadet mess hall, new post commissary building, and other matters of minor importance and less expense, some provision should be made for properly stabling the horses of officers. At present they are stabled wherever there may be room, which frequently results in annoyance and great inconvenience. It may also be advisable to restore old Fort Putnam from an historic interest.

In view of the fact that the post and Academy have seen a wonderful growth and development since their establishment, and may see still more in the future as the Army expands and a larger number of cadets is instructed, it is also suggested that some thought be given to the probable enlargement of the post by preparing a definite plan on which future improvements and additions can be made so as to obviate all haphazard locations and patchwork. Some of the present buildings are inconveniently located or have been added to from time to time, which could have been avoided had such a plan been in existence. One of the professors at the Academy has given this subject considerable thought and actually prepared a plan, but it is the plan of only one man. To make the proposition satisfactory and feasible it is suggested that a board of officers be appointed to consider the subject and prepare a plan, which, if accepted and approved by the Secretary of War, shall guide in all future additions or improvements.

It was understood that no matters affecting the curriculum were to be considered in this report. And it is hoped that the restrictions intended to be imposed have in no particular been disregarded. The usual effort to see between reveille and lights out at least a sample of every person, thing, place, disbursement, or duty there accessible during inspection and within its purview was faithfully made during this last inspection of this century. If general inspection is to continue in the Army the cadet should be familiar with it as of yore. And if the inspection were as free and full as possible, only additional commendation would be won for the work being done and warm admiration for the perfection of much of it, and equal encouragement offered for the highest improvement of all matters that attract attention.

For detailed information on many matters attention is invited to the inclosures submitted herewith.

Very respectfully,
J. C. BRECKINRIDGE,
*Inspector-General.*

The ADJUTANT-GENERAL, UNITED STATES ARMY.

## APPENDIX D.

*Information pertaining to universities, colleges, etc., having a military department, from reports received during fiscal year 1899–1900.*

| No. | Name and location. | State. | Institution. | | |
|---|---|---|---|---|---|
| | | | Capacity. | Males enrolled. | Number over 14 years. |
| 1 | Alabama Agricultural and Mechanical College, Auburn. | Alabama | 500 | 374 | 371 |
| 2 | University of Alabama, Tuscaloosa County, University post-office. | do | | | |
| 3 | University of Arkansas, Fayetteville | Arkansas | 1,000 | 450 | 440 |
| 4 | Ouachita Baptist College, Arkadelphia | do | 330 | 178 | 165 |
| 5 | Speers-Langford Military Institute, Searcy | do | 100 | 66 | 53 |
| 6 | University of California, Berkeley | California | 1,700 | 1,050 | 1,050 |
| 7 | Mount Tamalpais Military Academy, San Rafael. | do | 150 | 82 | 65 |
| 8 | State Agricultural College, Fort Collins | Colorado | | | |
| 9 | Yale University, New Haven[1] | Connecticut | | | |
| 10 | Delaware College, Newark | Delaware | 150 | 84 | 84 |
| 11 | Florida Agricultural College, Lake City | Florida | 300 | 150 | 150 |
| 12 | East Florida Seminary, Gainesville | do | | | |
| 13 | North Georgia Agricultural College, Dahlonega. | Georgia | 300 | 157 | 155 |
| 14 | Gordon Institute, Barnesville | do | 500 | 230 | 125 |
| 15 | Middle Georgia Military and Agricultural College, Milledgeville. | do | | | |
| 16 | University of Idaho, Moscow | Idaho | 500 | 138 | 137 |
| 17 | University of Illinois, Champaign | Illinois | 2,500 | 1,741 | 1,741 |
| 18 | Knox College, Galesburg[1] | do | | | |
| 19 | Northern Illinois Normal School, Dixon | do | | | |
| 20 | Western Military Academy, Upper Alton | do | 150 | 84 | 76 |
| 21 | Northwestern Military Academy, Highland Park. | do | 150 | 72 | 69 |
| 22 | De Pauw University, Greencastle[1] | Indiana | | | |
| 23 | Vincennes University, Vincennes | do | 175 | 70 | 70 |
| 24 | Purdue University, Lafayette[1] | do | | | |
| 25 | Culver Military Academy, Culver | do | 250 | 242 | 222 |
| 26 | Howe School, Lima | do | 150 | 75 | 55 |
| 27 | Cornell College, Mount Vernon | Iowa | | | |
| 28 | Iowa State University, Iowa City | do | | 1,204 | |
| 29 | Iowa Wesleyan University, Mount Pleasant[1] | do | | | |
| 30 | Iowa State Normal School, Cedar Falls | do | +1,500 | 552 | 552 |
| 31 | State Agricultural College, Manhattan | Kansas | | | |
| 32 | Baker University, Baldwin[1] | do | | | |
| 33 | St. John's Military School, Salina | do | | | |
| 34 | Agricultural and Mechanical College of Kentucky, Lexington. | Kentucky | | 466 | 458 |
| 35 | Central University of Kentucky, Richmond | do | 350 | 150 | 138 |
| 36 | Georgetown College, Georgetown[1] | do | | | |
| 37 | Louisiana State University and Agricultural and Mechanical College, Baton Rouge. | Louisiana | 500 | 370 | 370 |
| 38 | The University of Maine, Orono[1] | Maine | | | |
| 39 | St. John's College, Annapolis | Maryland | 200 | 143 | 143 |
| 40 | Maryland Agricultural College, College Park | do | 150 | 124 | 122 |
| 41 | Massachusetts Agricultural College, Amherst | Massachusetts | 250 | 180 | 180 |
| 42 | Massachusetts Institute of Technology, Boston | do | +1,200 | 1,125 | 1,125 |
| 43 | Harvard University, Cambridge | do | | | |
| 44 | Michigan Military Academy, Orchard Lake | Michigan | | | |
| 45 | Michigan Agricultural College, Lansing (post-office, Agricultural College). | do | 650 | 424 | 424 |
| 46 | University of Minnesota, Minneapolis | Minnesota | 3,000 | 2,600 | 2,000 |
| 47 | Bishop Seabury Mission, Faribault | do | 200 | 180 | 160 |
| 48 | Agricultural and Mechanical College of the State of Mississippi (post-office, Agricultural College). | Mississippi | 350 | 366 | 365 |
| 49 | University of the State of Missouri, Columbia | Missouri | 1,500 | 850 | 850 |
| 50 | St. Louis University, St. Louis | do | 500 | 390 | 250 |
| 51 | Wentworth Military Academy, Lexington | do | 150 | 111 | 111 |
| 52 | Kemper School, Boonville | do | 150 | 55 | 54 |
| 53 | Montana College of Agriculture and Mechanic Arts, Bozeman.[1] | Montana | 400 | 111 | 111 |
| 54 | University of Nebraska, Lincoln | Nebraska | 2,500 | 1,225 | 1,225 |
| 55 | Doane College, Crete[1] | do | 500 | 77 | 77 |
| 56 | State University of Nevada, Reno | Nevada | 400 | | |
| 57 | New Hampshire College of Agricultural and the Mechanic Arts, Durham. | New Hampshire | 200 | 126 | 126 |
| 58 | Rutgers College, New Brunswick | New Jersey | | | |
| 59 | Cornell University, Ithaca | New York | Unlimited. | •1,927 | 1,927 |
| 60 | St. John's College, Fordham, New York City | do | 300 | 261 | 232 |

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[1] No military instruction during the year.

*Information pertaining to universities, colleges, etc.*—Continued.

| No. | Name and location. | State. | Institution. | | |
|---|---|---|---|---|---|
| | | | Capacity. | Males enrolled. | Number over 14 years. |
| 61 | St. John's Military School, Manlius | New York | 180 | 170 | 150 |
| 62 | New York Military Academy, Cornwall on the Hudson. | do | | | |
| 63 | Clinton Liberal Institute, Fort Plain | do | (2) | 65 | 62 |
| 64 | College of St. Francis Xavier, New York City. | do | 900 | 731 | 450 |
| 65 | Riverview Academy, Poughkeepsie | do | | 150 | 116 |
| 66 | Peekskill Military Academy, Peekskill | do | 160 | 113 | 85 |
| 67 | Fairfield Seminary and Military Academy, Fairfield. | do | 300 | 75 | 70 |
| 68 | Haldane Union School, Coldspring | do | 350 | 180 | 35 |
| 69 | Bingham School, Asheville | North Carolina | 120 | 110 | 104 |
| 70 | North Carolina College of Agricultural and Mechanic Arts, Raleigh. | do | 350 | 302 | 302 |
| 71 | North Dakota Agricultural College, Fargo | North Dakota | 350 | 241 | 241 |
| 72 | University of North Dakota, Grand Forks | do | 500 | 200 | 200 |
| 73 | Ohio State University, Columbus | Ohio | 2,000 | 1,052 | 1,047 |
| 74 | Ohio Normal University, Ada | do | 1,500 | 2,216 | 2,216 |
| 75 | Ohio Wesleyan University, Delaware | do | | | |
| 76 | Wilberforce University, Wilberforce | do | | | |
| 77 | Ohio Military Institute, College Hill, Cincinnati | do | 150 | 50 | 42 |
| 78 | Denison University, Granville[1] | do | | | |
| 79 | Miami University, Oxford | do | 300 | 115 | 115 |
| 80 | State Agricultural College, Corvallis | Oregon | 700 | 248 | 248 |
| 81 | Bishop Scott Academy, Portland | do | 225 | 110 | 71 |
| 82 | The Pennsylvania State College, State College. | Pennsylvania | | | |
| 83 | Allegheny College, Meadville | do | | | |
| 84 | Pennsylvania Military College, Chester | do | 150 | 153 | |
| 85 | Grove City College, Grove City | do | 500 | 215 | 215 |
| 86 | Girard College, Philadelphia | do | | | |
| 87 | Franklin and Marshall College, Lancaster[1] | do | | | |
| 88 | Brown University, Providence[1] | Rhode Island | 1,000 | 685 | 685 |
| 89 | College of Agriculture and Mechanic Arts, Kingston. | do | | | |
| 90 | South Carolina Military Academy, Charleston. | South Carolina | 175 | 127 | 127 |
| 91 | Clemson Agricultural College, Clemson College | do | 425 | 461 | 461 |
| 92 | Agricultural College of South Dakota. Brookings. | South Dakota | 500 | 339 | |
| 93 | University of South Dakota, Vermilion | do | Unlimited. | 198 | 198 |
| 94 | University of Tennessee, Knoxville | Tennessee | 500 | 236 | 236 |
| 95 | Agricultural and Mechanical College of Texas, College Station. | Texas | | | |
| 96 | Baylor University, Waco | do | | | |
| 97 | Agricultural College of Utah, Logan | Utah | 800 | 350 | 350 |
| 98 | University of Vermont, Burlington | Vermont | | | |
| 99 | Norwich University, Northfield | do | 150 | 79 | 79 |
| 100 | Virginia Agricultural and Mechanical College, Blacksburg, | Virginia | 350 | 344 | 344 |
| 101 | Virginia Military Institute, Lexington | do | 300 | 240 | 240 |
| 102 | Danville Military Institute, Danville | do | 150 | 86 | 77 |
| 103 | University of Washington, Seattle | Washington | 800 | 320 | 320 |
| 104 | Washington Agricultural College, Pullman | do | 600 | 275 | 272 |
| 105 | Gonzaga College, Spokane | do | 250 | 200 | 125 |
| 106 | West Virginia University, Morgantown | West Virginia | | | |
| 107 | State University of Wisconsin, Madison | Wisconsin | | 1,850 | 1,850 |
| 108 | Lawrence University, Appleton | do | | | |
| 109 | St. John's Military Academy, Delafield | do | 150 | 145 | 100 |
| 110 | University of Wyoming, Laramie | Wyoming | 500 | 89 | 89 |
| | Total | | 39,290 | 30,125 | 27,300 |

| No. | Military department. | | | | Alumni, former students, and students in Spanish war as— | | |
|---|---|---|---|---|---|---|---|
| | Enrolled strength. | Average strength. | Average age. | Present at inspection. | Officers. | Enlisted men. | Total. |
| 1 | 344 | 310 | 19 | | 41 | 35 | 76 |
| 2 | 125 | | | | | | |
| 3 | 430 | 325 | 20 | 240 | | | |
| 4 | 150 | 100 | 19 | 79 | 4 | 5 | 9 |
| 5 | 65 | 40 | 18 | 46 | | | |
| 6 | 960 | 900 | 20 | 563 | | | |
| 7 | 82 | 78 | 16 | 75 | | | |
| 8 | | | | (2) | | | |
| 9 | | | | | 75 | 225 | 300 |
| 10 | 70 | 67 | 19 | | 10 | 20 | 30 |

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**[1] No military instruction during the year.**

**[2] Main building destroyed by fire.**

**[3] College closed at date of inspection and students in camp.**

*Information pertaining to universities, colleges, etc*—Continued.

| No. | Military department. | | | | Alumni, former students, and students in Spanish war as— | | |
|---|---|---|---|---|---|---|---|
| | Enrolled strength. | Average strength. | Average age. | Present at inspection. | Officers. | Enlisted men. | Total. |
| 11 | 140 | 110 | 18 | | 3 | 19 | 22 |
| 12 | | | | | | | |
| 13 | 132 | 95 | 18 | | | | |
| 14 | 120 | 92 | 17 | | 1 | 85 | 86 |
| 15 | | | | | | | |
| 16 | 105 | 87 | 19 | 47 | 8 | 36 | 44 |
| 17 | 338 | 323 | 20.5 | 278 | 11 | 41 | 52 |
| 18 | | | | | | | |
| 19 | | 106 | | 66 | | | |
| 20 | 84 | 78 | 16 | 71 | 8 | 10 | 18 |
| 21 | 72 | 67 | 16 | 56 | | | |
| 22 | | | | | | | |
| 23 | | 40 | | | | | 36 |
| 24 | | | | | 2 | 73 | 75 |
| 25 | 242 | 211 | 16.5 | 180 | | | |
| 26 | 75 | 75 | 17 | 52 | 4 | 27 | 31 |
| 27 | | | | | | | |
| 28 | 276 | 250 | 20 | | 14 | 75 | 89 |
| 29 | | | | | 6 | 23 | 29 |
| 30 | 518 | 296 | | | | | |
| 31 | | 229 | | 229 | | | |
| 32 | | | | | | | |
| 33 | | 61 | | 61 | | | |
| 34 | 465 | 355 | 19 | 155 | 9 | 11 | 20 |
| 35 | 76 | 69 | 19 | 38 | 7 | 11 | 18 |
| 36 | | | | | | | |
| 37 | 300 | 273 | 18.2 | | | | |
| 38 | | | | | | | |
| 39 | 122 | 115 | 17 | | 26 | 18 | 44 |
| 40 | 118 | 105 | | 80 | | | |
| 41 | 94 | 89 | $20\frac{11}{12}$ | 74 | 3 | 22 | 25 |
| 42 | 254 | 250 | $18\frac{11}{12}$ | 224 | 48 | 41 | 89 |
| 43 | | | | | | | |
| 44 | | 127 | | 126 | 39 | 25 | 64 |
| 45 | 391 | 283 | 20 | 209 | 1 | 19 | 20 |
| 46 | 570 | 490 | 20 | 350 | 36 | 178 | 214 |
| 47 | 180 | 175 | 16.5 | 162 | 126 | 130 | 256 |
| 48 | 366 | 298 | 18 | | | | |
| 49 | 290 | 270 | 19 | 166 | | | |
| 50 | 185 | 175 | 16 | 83 | | | |
| 51 | 111 | 90 | 17 | 111 | 27 | 62 | 89 |
| 52 | 55 | 48 | | 22 | | | 3 |
| 53 | | | | | | | 10 |
| 54 | 390 | 301 | 14 to 23 | 289 | | | |
| 55 | | | | | 1 | 4 | 5 |
| 56 | 131 | 115 | | (1) | | | |
| 57 | 79 | 69 | 18 | 54 | 1 | 6 | 7 |
| 58 | | 129 | | 129 | | | |
| 59 | { [2]580<br>[3]419 } | 500 | 19 | | 60 | 110 | 170 |
| 60 | 144 | 142 | 18 | 106 | 5 | 9 | 14 |
| 61 | 170 | 155 | 17 | | | | |
| 62 | | | | | 60 | 40 | 100 |
| 63 | 57 | 50 | 17 | | | | |
| 64 | 438 | 438 | 16 | 438 | 3 | 10 | 13 |
| 65 | 150 | 150 | 15 | | 43 | | 43 |
| 66 | 113 | 90 | 17 | 84 | | | |
| 67 | 100 | 80 | 18 | | | | 10 |
| 68 | 118 | 100 | 12 | 82 | | | |
| 69 | 110 | 100 | +16 | (1) | | | |
| 70 | 272 | 200 | 19 to 20 | | 5 | 32 | 37 |
| 71 | 101 | 80 | 18 | 32 | | 14 | 14 |
| 72 | 130 | 90 | 19 | | | | 14 |
| 73 | 400 | 344 | 18 | 269 | | | |
| 74 | 266 | 250 | 19 | 266 | | | |
| 75 | | | | 48 | 55 | 55 | 110 |
| 76 | | | | | | | |
| 77 | 50 | 42 | | 39 | 4 | 11 | 15 |
| 78 | | | | | | | |
| 79 | 91 | 89 | 20 | 86 | 6 | 4 | 10 |
| 80 | 225 | 198 | 19 | 163 | 1 | 49 | 50 |
| 81 | 106 | 100 | 16 | 66 | 24 | 27 | 51 |
| 82 | | | | | | | |
| 83 | | | | | | | |
| 84 | 153 | 130 | 18 | | 40 | 21 | 61 |
| 85 | 176 | 161 | 18 | | 5 | 85 | 90 |
| 86 | 519 | | | 366 | 3 | 307 | 310 |
| 87 | | | | | 5 | 10 | 15 |
| 88 | | | | | 5 | 30 | 35 |
| 89 | | | | | | | |

[1] Students on vacation at date of inspection, school closed. [2] Fall. [3] Spring.

*Information pertaining to universities, colleges, etc*—Continued.

| No. | Military department. | | | | Alumni, former students, and students in Spanish war as— | | |
|---|---|---|---|---|---|---|---|
| | Enrolled strength. | Average strength. | Average age. | Present at inspection. | Officers. | Enlisted men. | Total. |
| 90 | 127 | 127 | | | 8 | | 8 |
| 91 | 456 | 445 | 19 | | | | |
| 92 | 120 | | | | 7 | | 7 |
| 93 | 129 | 113 | 18 | | 10 | 3 | 13 |
| 94 | 181 | 143 | 18 | 121 | 52 | 20 | 72 |
| 95 | 375 | 260 | | | | | |
| 96 | | | | (1) | | | |
| 97 | 220 | 160 | | (1) | 3 | 18 | 21 |
| 98 | | 110 | | | | | |
| 99 | 79 | 72 | 20 | 62 | 22 | 21 | 43 |
| 100 | 320 | 300 | 16 | | | | |
| 101 | 240 | 240 | 18 to 19 | | 113 | 30 | 143 |
| 102 | 86 | 78 | 17 | | | | |
| 103 | 94 | 93 | 18.5 | 45 | | | |
| 104 | 195 | 158 | 19 | 195 | | | |
| 105 | 90 | 90 | 14 | 40 | | 2 | 2 |
| 106 | | 138 | | 127 | | | |
| 107 | 427 | 359 | 23 | 278 | 24 | 20 | 44 |
| 108 | | 50 | | | | | |
| 109 | 145 | 137 | 17 | 99 | 7 | 47 | 54 |
| 110 | 71 | 61 | | 39 | 3 | 20 | 23 |
| Total | 16,244 | 14,389 | | 7,311 | 1,084 | 2,146 | 3,353 |

| No. | Some of the work reported performed during the past year. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Field work. | | | Target practice. | | | | Guard mounting. | | |
| | Practice marches. | Encampments held. | Problems in minor tactics. | Number. | Average shots per cadet. | Position and aiming drills. | Gallery practice. | Mounted and maintained. | For instruction only. | Officer of day detailed. |
| 1 | 1 | | | | | | | | | Daily. |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | Do. |
| 4 | | | Yes. | | | | | | | 5 per week. |
| 5 | | | | | | | | | | Daily. |
| 6 | | | Yes. | (2) | 25 | (2) | (2) | 3 | | Each guard mount. |
| 7 | | Yes. | | | | | | 5 | | In camp. |
| 8 | | Yes. | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | Yes. | | | 12 | | | | |
| 11 | 1 | | Yes. | (2) | 35 | 2 | | 5 | | Daily. |
| 12 | | | | | | | | | | |
| 13 | 1 | | Yes. | (3) | 40 | 5 | | | | Do. |
| 14 | 10 | | | (2) | 40 | 3 | | 30 | | Do. |
| 15 | | | | | | | | | | |
| 16 | | | Yes. | 12 | 12 | 12 | 10 | | | In camp. |
| 17 | | | | (2) | 25 | 5 | | | | |
| 18 | | | | | | | | | | |
| 19 | | | | | | | | | | |
| 20 | 1 | | | 3 | 15 | 2 | | 18 | | Daily. |
| 21 | 7 | Yes. | | 125 | 10 | 4 | 4 | 49 | | Do. |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | Yes. | Yes. | 10 | 10 | 14 | 14 | Daily. | | Do. |
| 26 | 3 | | | (2) | 10 | | | 7 | | Do. |
| 27 | | | | | | | | | | |
| 28 | 2 | | | | | | | 3 | | Each guard mount. |
| 29 | | | | | | | | | | |
| 30 | | | | | | (2) | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | 8 | Yes. | | | | | | 10 | | Daily. |
| 35 | | | | | | | | | | Drill days. |
| 36 | | | | | | | | | | |
| 37 | | | | 1 | 25 | | | | | Daily. |
| 38 | | | | | | | | | | |
| 39 | | | | | | | | 3 | | Do. |
| 40 | | | Yes. | | | | | (2) | | Do. |

[1] Students on vacation at date of inspection; school closed. [2] Number not given. [3] For one month.

*Information pertaining to universities, colleges, etc.*—Continued.

| No. | Some of the work reported performed during the past year. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Field work. | | | Target practice. | | | | Guard mounting. | | |
| | Practice marches. | Encampments held. | Problems in minor tactics. | Number. | Average shots per cadet. | Position and aiming drills. | Gallery practice. | Mounted and maintained. | For instruction only. | Officer of day detailed. |
| 41 | | | Yes. | 4 | 35 | 4 | 5 | | 1 | Once only. |
| 42 | | | | 4 | 40 | | | | | |
| 43 | | | | | | | | | | |
| 44 | | | | | | | | | | |
| 45 | | | | | | | | | | |
| 46 | | | | 10 | 20 | | 12 | 10 | | |
| 47 | | | Yes. | (1) | 20 | | | | 10 | Daily. |
| 48 | 3 | | Yes. | 30 | 13 | | | Daily. | | Do. |
| 49 | | | | (1) | 10 | | | 3 | | Each guard mount. |
| 50 | | | | | | | | | | Each drill. |
| 51 | 12 | | Yes. | | | | | Daily. | | Daily. |
| 52 | | | | | | | | 25 | | Do. |
| 53 | | | | | | | | | | |
| 54 | (1) | Yes. | | (1) | 5 | | | (1) | | Each guard mount. |
| 55 | | | | | | | | | | |
| 56 | 4 | | Yes. | | | | | 8 | | Do. |
| 57 | 1 | | | 6 | 59 | | | | | |
| 58 | | | | | | | | | | |
| 59 | | | | | | | 10 | | | |
| 60 | | | | | | | | | | |
| 61 | 4 | Yes. | Yes | 25 | 10 | 25 | | Daily. | | Daily. |
| 62 | | | | | | | | | | |
| 63 | | | | 7 | 18 | | | Daily. | | Do. |
| 64 | | | | | | | | | | |
| 65 | | | | (1) | (1) | | 15 | | | Do. |
| 66 | | | | | | 12 | | | | Do. |
| 67 | (1) | | Yes. | (1) | (1) | 20 | (1) | Daily. | | Do. |
| 68 | | Yes. | | | | | | 6 | | In camp. |
| 69 | 4 | | | | | | | Daily. | | Daily. |
| 70 | 1 | | | | | | | | | Do. |
| 71 | | | Yes. | | | | | | | |
| 72 | | | | | | | | | | |
| 73 | | | | | | | | | 4 | |
| 74 | | | | (1) | 30 | 10 | | | | |
| 75 | | | | | | | | | | |
| 76 | | | | | | | | | | |
| 77 | (1) | Yes. | | 4 | 16 | 4 | | | | Do. |
| 78 | | | | | | | | | | |
| 79 | | | | | | | | | | |
| 80 | (1) | Yes. | Yes. | 2 | 9 | 2 | | 9 | | All guards. |
| 81 | | | | | | | | | | Daily. |
| 82 | | | | | | | | | | |
| 83 | | | | | | | | | | |
| 84 | 8 | | | 6 | 39 | | 35 | 242 | | Do. |
| 85 | | | | | | | | | | |
| 86 | | Yes. | | | | | | | | |
| 87 | | | | | | | | | | |
| 88 | | | | | | | | | | |
| 89 | | | | | | | | | | |
| 90 | 2 | Yes. | | | | | | Daily for 9 months | | Do. |
| 91 | | | | | | | | 277 | | Do. |
| 92 | | | | (1) | 10 | | | | | |
| 93 | 2 | | | 6 | 30 | | | 2 | | Guard mount. |
| 94 | | | | (1) | 18 | | | | | When cadets are on extra duty. |
| 95 | | | | | | | | | | |
| 96 | | | | | | | | | | |
| 97 | | | | | | | | | | |
| 98 | | | | | | | | | | |
| 99 | | Yes. | | 8 | 30 | | | 9 | | Daily. |
| 100 | 1 | Yes. | | 8 | 6 | 8 | | | | Do. |
| 101 | 1 | Yes. | Yes. | (1) | 35 | | | Daily. | | Do. |
| 102 | | | | | | (1) | (1) | 56 | | Do. |
| 103 | 2 | Yes. | | 87 | 35 | | | 6 | | In camp. |
| 104 | | Yes. | | | | | | 3 | | Do. |
| 105 | | | | | | | | | | |
| 106 | | | | | | | | | | |
| 107 | | | | (1) | (1) | | | | | |
| 108 | | | | | | | | | | |
| 109 | | Yes. | Yes. | | | | | 20 | | Daily. |
| 110 | | | | | | 10 | | | | |

[1] Number not given.

*Information pertaining to universities, colleges, etc.*—Continued.

| No. | Some of the work reported performed during the past year. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Drills. | | | | | | Parades. | |
| | Infantry. | Artillery. | Cavalry. | Competitive. | Exhibition. | Signal. | Dress. | Street. |
| 1 | 138 | | | 3 | 1 | | 12 | 2 |
| 2 | | | | | | | | |
| 3 | 78 | | | 3 | 2 | | 9 | |
| 4 | 99 | | | 1 | 8 | | 5 | 6 |
| 5 | Daily. | | | | | | | |
| 6 | 70 | 70 | | 4 | | 10 | 6 | |
| 7 | 160 | 32 | 32 | | | | 38 | (1) |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | 79 | 8 | | 1 | 2 | (1) | (1) | |
| 11 | 160 | | | (1) | 2 | | 40 | 3 |
| 12 | | | | | | | | |
| 13 | 124 | 60 | | 1 | 12 | 60 | | (1) |
| 14 | 175 | | | 4 | 4 | 15 | 5 | 3 |
| 15 | | | | | | | | |
| 16 | 110 | 10 | | 1 | | 36 | 2 | 2 |
| 17 | | | | | | 15 | 5 | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | 63 | 19 | 57 | | | | 4 | 2 |
| 21 | 145 | | | 8 | (1) | 19 | 27 | 3 |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | 75 | 19 | 131 | 1 | 1 | 20 | 29 | 2 |
| 26 | 159 | 21 | | 2 | 2 | 16 | 33 | |
| 27 | | | | | | | | |
| 28 | 85 | 85 | | 2 | | 75 | 7 | 4 |
| 29 | | | | | | | | |
| 30 | 180 | 40 | | 1 | 6 | | 20 | 1 |
| 31 | | | | | | | | |
| 32 | | | | | | | | |
| 33 | | | | | | | | |
| 34 | 181 | 63 | | | 5 | 95 | 20 | 7 |
| 35 | 46 | 17 | | | | | 3 | 1 |
| 36 | | | | | | | | |
| 37 | 165 | 150 | | 2 | 2 | | Weekly. | 2 |
| 38 | | | | | | | | |
| 39 | 70 | | | | | | 6 | 2 |
| 40 | | | | | 3 | | 7 | |
| 41 | 54 | | | | 2 | | | |
| 42 | 26 | | | | | | 6 | |
| 43 | | | | | | | | |
| 44 | | | | | | | | |
| 45 | 99 | | | | | | 15 | 1 |
| 46 | 78 | | 73 | 2 | 2 | | 10 | 2 |
| 47 | | | | 1 | | (1) | 12 | 1 |
| 48 | 69 | 10 | | | 2 | | 18 | 3 |
| 49 | 60 | 60 | | 2 | 4 | (1) | 15 | 2 |
| 50 | (1) | | | 2 | 1 | | 4 | 1 |
| 51 | 175 | 20 | | 1 | 2 | | 15 | 10 |
| 52 | 170 | 81 | | 1 | | 15 | 25 | |
| 53 | | | | | | | | |
| 54 | 85 | | 24 | 3 | | | 7 | 4 |
| 55 | | | | | | | | |
| 56 | 150 | | | | 3 | (1) | 3 | 3 |
| 57 | 105 | | | 1 | 4 | 68 | | 1 |
| 58 | | | | | | | | |
| 59 | 68 | 14 | | 1 | | 88 | 6 | |
| 60 | 27 | | | 1 | | | 5 | 1 |
| 61 | 118 | 40 | (1) | 3 | 2 | 26 | 20 | 4 |
| 62 | | | | | | | | |
| 63 | 140 | | | | | (1) | 7 | 2 |
| 64 | 45 | | | | 1 | (1) | 10 | (1) |
| 65 | 214 | | | 2 | 25 | 18 | 25 | 1 |
| 66 | 200 | 20 | | | 3 | | 50 | 6 |
| 67 | 175 | (1) | (1) | | | 20 | (1) | (1) |
| 68 | 50 | | | | | | 10 | 4 |
| 69 | (1) | | | | 4 | | 8 | |
| 70 | (1) | | | | | | Weekly. | 1 |
| 71 | 72 | | | | | | | |
| 72 | 95 | | | | | | | |
| 73 | 3 weekly. | | | 1 | | 12 | 4 | 1 |
| 74 | 195 | 195 | | 2 | 1 | 15 | 30 | 10 |
| 75 | | | | | | | | |
| 76 | | | | | | | | |
| 77 | 172 | 84 | | 1 | 1 | 10 | | 1 |
| 78 | | | | | | | | |
| 79 | 84 | | | | 3 | | | |

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[1] Number not given.

*Information pertaining to universities, colleges, etc.*—Continued.

| No. | Some of the work reported performed during the past year. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Drills. | | | | | | Parades. | |
| | Infantry. | Artillery. | Cavalry. | Competitive. | Exhibition. | Signal. | Dress. | Street. |
| 80 | (1) | | | | 5 | 95 | 2 | 1 |
| 81 | 190 | | | 2 | 2 | | 8 | 1 |
| 82 | | | | | | | | |
| 83 | | | | | | | | |
| 84 | (1) | (1) | (1) | | | 50 | 3 | |
| 85 | 87 | | | | | | | |
| 86 | | | | | | | | |
| 87 | | | | | | | | |
| 88 | | | | | | | | |
| 89 | | | | | | | | |
| 90 | 138 | (1) | | 2 | 4 | | 12 | 2 |
| 91 | 80 | | | 2 | | | 12 | 1 |
| 92 | 90 | | | | | | | |
| 93 | 133 | 12 | | 1 | 1 | 80 | 10 | 5 |
| 94 | 88 | (1) | (1) | 8 | 8 | (1) | Weekly. | 2 |
| 95 | | | | | | | | |
| 96 | | | | | | | | |
| 97 | | | | 1 | | 40 | | |
| 98 | | | | | | | | |
| 99 | 142 | 7 | | | | | 12 | 3 |
| 100 | 160 | 160 | | 1 | 3 | 14 | 10 | 2 |
| 101 | 127 | 25 | 15 | | 8 | 28 | 132 | 8 |
| 102 | Daily. | | | 3 | 6 | (1) | After drills. | 5 |
| 103 | 58 | | | 1 | 1 | | 4 | 2 |
| 104 | (1) | Weekly. | | | | 5 | 7 | 2 |
| 105 | Semi-weekly. | | | | | | | |
| 106 | | | | | | | | |
| 107 | (1) | | | 2 | | 57 | 2 | 2 |
| 108 | | | | | | | | |
| 109 | 385 | (1) | | (1) | 19 | | 20 | |
| 110 | 69 | 6 | | 1 | | | | |

[1] Number not given.

## APPENDIX E.

### SUMMARY OF MONEY INSPECTIONS FOR THE DECADE.

TABLE A.—*Summary of inspections of money accounts for the decade 1891–1900, inclusive.*

| Designation. | 1891. | 1892. | 1893. | 1894. |
|---|---|---|---|---|
| Balances taken up | $4,596,839.54 | $6,007,948.73 | $4,137,817.43 | $4,006,495.08 |
| Receipts from Treasury | 42,677,177.57 | 48,384,734.49 | 46,598,494.33 | 48,103,316.44 |
| Receipts from sales and other sources | 1,737,444.20 | 1,928,668.39 | 1,766,026.95 | 1,839,021.03 |
| Transfers from other officers[1] | 13,145,343.82 | 15,087,785.33 | 12,466,846.78 | 11,718,886.19 |
| Error in addition, National Home for Disabled Volunteer Soldiers | | | | |
| Total to be accounted for | 62,156,805.13 | 71,409,136.94 | 64,969,185.49 | 65,667,718.74 |
| Disbursements[2] | 41,567,617.16 | 50,187,183.57 | 47,230,748.10 | 49,842,941.71 |
| Transfers to other officers[3] | 13,288,899.81 | 15,137,982.61 | 12,406,586.56 | 10,760,575.00 |
| Deposited to credit Treasurer of United States | 843,217.17 | 1,908,731.22 | 1,594,902.91 | 970,777.34 |
| Total credits | 55,699,734.14 | 67,233,897.40 | 61,232,137.57 | 61,574,294.05 |
| Balance on hand[4] | 6,457,070.99 | 4,175,239.54 | 3,737,047.92 | 4,093,424.69 |
| Total accounted for | 62,156,805.13 | 71,409,136.94 | 64,969,185.49 | 65,667,718.74 |
| Balance distributed as follows: | | | | |
| United States Treasury | 5,042,806.47 | 3,331,208.39 | 2,949,458.64 | 2,881,336.58 |
| United States depositories | 1,378,380.80 | 800,075.89 | 760,422.50 | 1,163,965.22 |
| Cash on hand | 35,883.72 | 43,154.67 | 26,787.83 | 48,122.89 |
| Discrepancies, etc | | 800.87 | 378.95 | |
| Total balance | 6,457,070.99 | [5] 4,175,239.82 | 3,737,047.92 | 4,093,424.69 |

[1] Transfers are 45 per cent of receipts from Treasury.
[2] Average monthly disbursements, $6,054,954.37.
[3] Transfers are 46 per cent of disbursements.
[4] Average monthly balances, $3,510,748.62.
[5] Minus 28 cents discrepancy, acting commissary subsistence, Fort Stanton, N. Mex.

TABLE A.—*Summary of inspections of money accounts, etc.*—Continued.

| Designation. | 1895. | 1896. | 1897. | 1898. |
|---|---|---|---|---|
| Balances taken up | $4,095,385.66 | $5,001,312.93 | $4,853,592.25 | $5,665,491.89 |
| Receipts from Treasury | 55,039,559.58 | 48,550,860.44 | 47,439,027.18 | 40,774,383.63 |
| Receipts from sales and other sources | 2,317,872.58 | 2,410,685.16 | 2,367,986.73 | 2,007,409.23 |
| Transfers from other officers[1] | 14,666,383.28 | 16,135,510.00 | 15,523,866.78 | 14,121,428.57 |
| Error in addition, National Home for Disabled Volunteer Soldiers | ........ | ........ | .40 | ........ |
| Total to be accounted for | 76,119,201.05 | 72,098,368.53 | 70,184,473.34 | 62,568,713.32 |
| Disbursements | 57,561,200.68 | 51,230,004.10 | 49,577,037.91 | 44,527,604.42 |
| Transfers to other officers[3] | 12,036,795.66 | 14,918,508.60 | 13,796,431.11 | 11,517,367.52 |
| Deposited to credit Treasurer of United States | 1,339,647.21 | 889,626.98 | 1,259,170.08 | 1,064,289.70 |
| Total credits | 70,937,643.55 | 67,038,139.68 | 64,632,639.10 | 57,109,261.64 |
| Balance on hand[4] | 5,181,557.50 | 5,060,228.85 | 5,551,834.24 | 5,459,451.68 |
| Total accounted for | 76,119,201.05 | 72,098,368.53 | 70,184,473.34 | 62,568,713.32 |
| Balance distributed as follows: | | | | |
| United States Treasury | 3,675,747.22 | 3,542,787.62 | 4,179,454.96 | 4,289,661.61 |
| United States depositories | 1,181,745.83 | 1,439,305.60 | 1,296,890.24 | 1,155,123.53 |
| Cash on hand | 324,116.16 | 78,135.63 | 75,489.04 | 14,666.54 |
| Discrepancies, etc | ........ | ........ | ........ | ........ |
| Total balance | [5]5,181,609.21 | 5,060,228.85 | 5,551,834.24 | 5,459,451.68 |

| Designation. | 1899. | 1900. | Total for decade. | Average for decade. |
|---|---|---|---|---|
| Balances taken up | $4,562,076.25 | $22,140,624.25 | $66,067,584.01 | $6,606,758.40 |
| Receipts from Treasury | 223,284,070.22 | 145,561,447.47 | 746,413,071.30 | 74,641,307.13 |
| Receipts from sales and other sources | 5,252,482.73 | 9,100,570.29 | 30,728,167.29 | 3,072,816.73 |
| Transfers from other officers[1] | 117,756,893.53 | 109,897,880.04 | 340,520,824.32 | 34,052,082.43 |
| Error in addition, National Home for Disabled Volunteer Soldiers | ........ | ........ | .40 | .04 |
| Total to be accounted for | 350,855,522.73 | 287,000,522.05 | 1,183,729,647.32 | 118,372,964.73 |
| Disbursements[2] | 184,497,349.87 | 150,372,936.51 | 726,594,524.03 | 72,659,452.40 |
| Transfers to other officers[3] | 130,788,963.87 | 102,863,086.35 | 337,515,197.09 | 33,751,519.71 |
| Deposited to credit Treasurer of United States | 10,963,445.17 | 13,678,631.99 | 34,512,439.77 | 3,451,243.98 |
| Total credits | 326,249,758.91 | 266,914,654.85 | 1,098,622,160.89 | 109,862,216.09 |
| Balance on hand[4] | 24,605,763.82 | 20,785,867.20 | 85,107,486.43 | 8,510,748.64 |
| Total accounted for | 350,855,522.73 | 287,700,522.05 | 1,183,729,647.32 | 118,372,964.73 |
| Balance distributed as follows: | | | | |
| United States Treasury | 20,185,780.48 | 16,376,887.85 | 66,455,130.32 | 6,645,513.03 |
| United States depositories | 2,739,560.32 | 2,644,288.22 | 14,559,758.15 | 1,455,975.82 |
| Cash on hand | 1,680,423.02 | 1,763,001.83 | 4,089,781.83 | 408,978.13 |
| Discrepancies, etc | ........ | 1,711.00 | 2,890.32 | 289.03 |
| Total balance | 24,605,763.82, | [6]20,785,888.90 | 85,107,560.12 | 8,510,756.01 |
| Less (see notes) | ........ | ........ | 73.69 | 7.37 |
| | ........ | ........ | 85,107,486.43 | 8,510,748.64 |

[1] Transfers are 45 per cent of receipts from Treasury.
[2] Average monthly disbursements, $6,054,954.37.
[3] Transfers are 46 per cent of disbursements.
[4] Average monthly balances, $8,510,748.62.
[5] Minus $51.21 excess on National Home for Disabled Volunteer Soldiers accounts.
[6] Minus discrepancies at posts.

TABLE B.—*Summary of inspections of disbursements for the decade 1891–1900, inclusive*

| Year. | Officers inspected. | Number of inspections. | Amount involved. | By officers of I. G. Dept. |  | By other officers. |  | Under par. 877, A. R. |  |
|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | No. | Amount. | No. | Amount. | No. | Amount. |
| 1891 | 478 | 1,304 | $62,156,805.13 | 740 | $59,156,805.13 | 564 | $3,000,000.00 | ..... | .............. |
| 1892 | 470 | 1,516 | 71,409,136.94 | 866 | 65,126,812.26 | 562 | 3,763,252.05 | 88 | $2,519,072.63 |
| 1893 | 462 | 1,410 | 64,969,185.49 | 857 | 59,491,310.58 | 459 | 4,283,950.85 | 94 | 1,193,924.06 |
| 1894 | 494 | 1,468 | 65,667,718.74 | 851 | 61,771,581.22 | 479 | 2,617,326.55 | 138 | 1,278,860.97 |
| 1895 | 459 | 1,145 | 76,119,201.05 | 776 | 72,314,338.74 | 265 | 1,306,269.41 | 104 | 2,498,592.90 |
| 1896 | 421 | 881 | 72,098,368.53 | 757 | 68,679,406.83 | 16 | 39,340.15 | 108 | 3,379,621.55 |
| 1897 | 420 | 943 | 70,184,473.34 | 802 | 67,975,315.62 | 14 | 25,057.55 | 127 | 2,184,100.17 |
| 1898 | 480 | 713 | 62,568,713.82 | 526 | 58,494,245.01 | 6 | 18,024.41 | 181 | 4,056,443.90 |
| 1899 | 587 | 946 | 350,855,522.73 | 682 | 325,382,177.71 | 6 | 102,335.83 | 258 | 25,371,009.19 |
| 1900 | 737 | 1,406 | 287,700,522.05 | 1,152 | 273,955,945.29 | 7 | 129,295.96 | 247 | 13,615,280.80 |
| Total | 4,958 | 11,732 | 1,183,729,647.32 | 8,009 | 1,112,347,888.39 | 2,375 | 15,284,852.76 | 1,345 | 56,096,906.17 |
| Average | 496 | 1,173 | 118,372,964.73 | 801 | 111,234,788.84 | 238 | 1,528,485.28 | 184 | 5,609,690.61 |
| Per cent of total | ..... | ..... | .............. | ..... | .940 | ..... | .018 | ..... | .047 |

The summaries of transactions in inspections of money accounts for the decade 1891–1900 show (as exhibited in Table A) that for that period the total amount involved was $1,183,729,647.32; the extremes of the various annual amounts involved were $350,855,522.73 in 1899 and $62,156,805.13 in 1891, and the average annual amount involved was $118,372,964.73. The balances taken up for the decade amounted to $66,067,584.01; and the extremes were $22,140,624.25 in 1900 and $4,006,495.08 in 1894, and the annual average was $6,606,758.40. The total receipts from the Treasury were $746,413,071.30, and the extremes were $223,284,070.22 in 1899 and $40,774,383.63 in 1898, and the annual average was $74,641,307.13. The total receipts from sales and other sources were $30,728,167.29; the extremes were $9,100,570.29 in 1900 and $1,737,444.20 in 1891, and the annual average was $3,072,816.73. The total receipts by transfers from other officers were $340,520,824.32; the extremes were $117,756,893.53 in 1899 and $12,466,846.78 in 1893, and the annual average was $34,052,082.43. It appears noticeable that the volume of transfers was nearly ten times as great in 1899 as in 1893, though the receipts from the Treasury were less than six times the minimum.

For the decade the total amount of disbursements inspected was $726,594,524.03; the extremes were $184,497,349.87 in 1899 and $41,567,617.16 in 1891, and the annual average was $72,659,452.40. The total transfers to other officers were $337,515,197.09; the extremes were $130,788,963.87 in 1899 and $10,760,575 in 1894, and the annual average was $33,751,519.71. The total deposited to the credit of the Treasurer of the United States was $34,512,439.77; the extremes were $13,678,631.99 in 1900 and $843,217.17 in 1891, and the annual average was $3,451,243.98.

The total credits during the decade were $1,098,622,160.89; the extremes were $326,249,758.91 in 1899 and $55,699,734.14 in 1891, and the annual average was $109,862,216.09.

The total of balances remaining on hand for the decade was $85,107,486.43; the extremes were $24,605,763.82 in 1899 and $3,737,047.92 in 1893, and the annual average was $8,510,748.62.

Of the distribution of this balance there was during the decade a total in the United States Treasury of $66,455,130.32; the extremes were $20,185,780.48 in 1899 and $2,881,336.58 in 1894, and the annual average was $6,645,513.03. The total in United States depositories was $14,559,758.15, and the extremes were $2,739,560.32 in 1899 and $760,422.50 in 1893, and the annual average was $1,455,975.82.

For the decade the total of the cash remaining on hand was $4,089,781.33; the extremes were $1,763,001.83 in 1900 and $14,666.54 in 1898, and the annual average was $408,978.13. The total cash on hand for the decade was about one-half of 1 per cent of the total disbursements for the same period.

For the decade the relation between the total amount involved and the disbursements, transfers between officers, deposits in the Treasury, and final balances on hand were as follows: Disbursements, 0.614 per cent of the total amount involved; transfers between officers, 0.285 per cent; redeposited in Treasury, 0.029 per cent; balances on hand, 0.072 per cent.

The average monthly disbursements of officers of the Army for the decade was $6,054,954.37; and their average final balances for the same period represented 140 per cent of this average.

Table B shows that for the decade there were 4,958 officers inspected in 11,732 inspections, an annual average of about 496 officers and 1,173 inspections. Of these inspections 8,009, covering $1,112,347,888.39 (0.94 per cent of the entire total involved), were inspected by officers of the Inspector-General's Department, an annual average of 801 inspections and $11,234,788.84; 2,375 inspections, covering $15,284,852.76 (0.013 per cent of the entire total involved), were inspected by other officers, an annual average of 238 inspections and $1,528,485.28; and 1,345 inspections, covering $56,096,906.17 (0.047 per cent of the entire total involved), were statements verified by inspectors-general, made under paragraph 877 of the Army Regulations, an annual average of 134 inspections and $5,609,690.61.

The extreme numbers of officers inspected were 737 in 1900 and 420 in 1897. The extremes of inspections were 1,516 in 1892 and 713 in 1898; by inspectors-general, 1,152 in 1900 and 526 in 1898; by other officers, 564 in 1891 and 6 in 1898 and 1899; under paragraph 877 of the Army Regulations, 258 in 1899 and 88 in 1892.

The large number of inspections in each of the first five years of the decade was due to the fact that there were then much more frequent minor inspections of post quartermasters and post commissaries than there were in the last five years. When inspection districts were established in 1895 it was directed that post staff officers should be inspected once a year by the inspector at his annual inspection of the post. In the first half of the decade many of the inspections of accounts made by officers other than regular inspectors were of post quartermasters and commissaries, and while these officers in the first five years of the decade made 2,329 inspections of disbursements, an average of about 482 a year, they made only 49 such inspections during the whole of the last five years, an average of about 10 a year.

## APPENDIX F.

*Statement showing property inspected and condemned, and retained in service, compiled from reports received during fiscal years 1900 and 1899.*

### FISCAL YEAR 1900.

| | Inspected and condemned. | | | Inspected and retained. | | |
|---|---|---|---|---|---|---|
| | Articles, cost stated. | Cost. | Articles, cost not stated. | Articles, cost stated. | Cost. | Articles, cost not stated. |
| Staff | 18,008,611 | $999,741.54 | 30,108,195 | 70,107 | $55,997.52 | 56,029 |
| Posts | 697,124 | 825,633.44 | 391,703 | 34,497 | 368,890.57 | 80,911 |
| Arsenals and armories | 2,202,601 | 792,294.94 | 61,577 | 5,462 | 1,815.55 | 42 |
| Transports | 219,557 | 10,767.58 | 7,115 | 5,635 | 562.59 | 133 |
| Cavalry | 641,955 | 252,664.90 | 113,336 | 20,485 | 85,104.83 | 1,268 |
| Artillery | 193,459 | 588,811.35 | 187,697 | 79,692 | 52,963.39 | 45,565 |
| Infantry | 1,107,483 | 222,197.87 | 22,797 | 75,940 | 74,471.75 | 13,352 |
| Volunteer troops | 124,785 | 32,159.99 | 38,397 | 64,918 | 23,709.93 | 161,598 |
| Miscellaneous | 6,356 | 2,420.25 | 1,638 | 739 | 523.43 | 37 |
| Total | 23,201,931 | 3,724,691.86 | 30,932,455 | 357,475 | 659,039.06 | 358,930 |

### FISCAL YEAR 1899.

| | | | | | | |
|---|---|---|---|---|---|---|
| Staff | 2,978,682 | $690,226.35 | 2,952,340 | 886,586 | $50,774.94 | 87,872 |
| Posts | 461,851 | 61,877.07 | 6,453 | 182,331 | 6,967.33 | 2,669 |
| Arsenals and armories | 1,984 | 731.93 | 2,170 | 1 | .60 | 1 |
| Transports | ........ | ........ | ........ | ........ | ........ | ........ |
| Cavalry | 205,676 | 195,691.10 | 11,254 | 8,919 | 40,162.31 | 1,990 |
| Artillery | 172,922 | 72,314.58 | 180,159 | 87,809 | 31,852.10 | 67,765 |
| Infantry | 325,494 | 122,596.46 | 59,525 | 16,974 | 36,778.62 | 87,157 |
| Volunteer troops | 364,745 | 235,427.22 | 198,641 | 50,779 | 95,193.08 | 46,241 |
| Miscellaneous | 24,313 | 369.38 | 6,702 | ........ | ........ | 65 |
| Total | 4,535,667 | 1,379,234.09 | 3,417,244 | 1,183,399 | 261,728.98 | 243,760 |

# APPENDIX G.

*Data from inventory and inspection reports, fiscal year 1900, showing condemnation of some articles of subsistence stores, inspected in the United States, Philippines, Cuba, Porto Rico, Alaska, Hawaii, and on the transports.*

| Articles. | Unit. | United States. | | Philippines. | | Cuba. | | Porto Rico. | | Alaska. | | Hawaii. | | Transports. | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Quantity. | Cost. | Quantity. | Cost. | Quantity. | Cost. | Quantity. | Cost. | Quantity. | Cost. | Quantity. | Cost. | Quantity. | Cost. | Quantity. | Cost. |
| Bacon | Pounds | 140.521 | $11,013.39 | 204,953 | $21,046.00 | 121,456 | $10,832.57 | 1,159 | $140.52 | | | | | 18,401 | $1,816.92 | 486,490 | $44,849.40 |
| | Cans | | | 80 | 17.04 | 277 | 46.75 | 16 | 1.77 | | | | | | | 373 | 65.56 |
| Beans | Pounds | 3,859 | 84.96 | 14,590 | 333.20 | 10,358 | 243.36 | 2,405 | 54.50 | | | | | | | 31,212 | 716.02 |
| | Cans | 1,721 | 107.18 | 723 | 69.72 | 357 | 20.20 | 422 | 23.38 | | | | | | | 3,223 | 220.48 |
| Beef | Pounds | 16,097 | 1,191.89 | 62,381 | 3,831.72 | | | 788 | 30.90 | | | | | 70,956 | 8,134.42 | 229,022 | 13,188.93 |
| | Barrels | 11¼ | 115.00 | | | | | | | | | | | | | 11¼ | 115.00 |
| | Cans | 29 | 4.86 | 349 | 58.76 | 29 | 6.40 | 35 | 5.54 | | | | | | | 442 | 75.56 |
| Bread, hard and soft | Pounds | 216,816 | 10,290.14 | 1,254,879 | 57,380.59 | 8,399 | 344.27 | 24,760 | 1,397.47 | | | 1,223 | $54.30 | 3,470 | 141.80 | 1,509,547 | 69,608.57 |
| Butter | do | 1,057 | 333.76 | 216 | 73.31 | 3,531 | 1,067.16 | 49 | 16.43 | | | | | | | 4,853 | 1,490.67 |
| Cheese—American | do | 603 | 81.74 | 1,417 | 236.84 | 9,687 | 1,252.01 | 240 | 32.90 | 17 | $2.13 | | | 57 | 7.41 | 12,021 | 1,613.03 |
| Edam | Number | 184 | 136.14 | 847 | 566.60 | 1,771 | 1,263.97 | 167 | 120.69 | | | | | 3 | 2.19 | 2,972 | 2,089.59 |
| Cigars | do | 21,866 | 1,041.39 | 1,401 | 40.17 | | | 8,158 | 361.58 | | | | | 717 | 20.41 | 32,142 | 1,463.55 |
| Cigarettes | do | | | 2,100 | 14.00 | 10,880 | 259.83 | | | | | | | 9,670 | 41.03 | 22,650 | 314.86 |
| Coffee | Pounds | 4,829 | 1,150.97 | 6,404 | 1,146.64 | 10,091 | 1,347.82 | 1,948 | 224.86 | | | | | 130 | 29.76 | 23,402 | 3,900.05 |
| Corn meal | do | 18,907 | 209.28 | 6,799 | 231.41 | 20,284 | 275.62 | 20,292 | 300.00 | | | | | 265 | 4.32 | 66,547 | 1,020.63 |
| Crackers | do | 9,167 | 1,095.53 | 2,536 | 271.88 | 87 | 15.59 | 3,270 | 577.18 | | | | | 111 | 8.84 | 15,171 | 1,969.02 |
| Eggs | Dozen | | | | | 2,370 | 549.13 | | | | | | | | | 2,370 | 549.13 |
| Flour | Pounds | 113,005 | 2,099.88 | 77,835 | 1,273.97 | 272,655 | 5,561.24 | 44,554 | 942.44 | | | | | 249,647 | 4,728.59 | 757,696 | 14,606.12 |
| Fruits—Dried | do | 11,940 | 963.55 | 6,883 | 597.30 | 640 | 54.89 | | | | | | | 362 | 47.25 | 19,825 | 1,662.99 |
| Canned | Cans | 1,731 | 255.49 | 17,305 | 2,264.71 | 103 | 21.31 | | | | | | | | | 19,145 | 2,541.51 |
| Ham | Pounds | 3,442 | 307.28 | 1,224 | 157.24 | 7,883 | 585.41 | 1,134 | 144.06 | | | | | | | 13,683 | 1,193.99 |
| | Cans | 2 | .40 | 2,238 | 447.73 | 119 | 22.44 | | | | | | | | | 2,359 | 470.57 |
| Hominy | Pounds | 179,450 | 2,333.26 | 7,186 | 231.26 | 3,690 | 45.35 | 592 | 11.89 | | | 86 | 3.23 | | | 191,004 | 2,624.99 |
| Lard | do | 579 | 51.45 | 1,195 | 101.02 | 13,803 | 966.41 | 235 | 18.19 | | | | | | | 15,812 | 1,137.07 |
| Macaroni | do | 332 | 22.80 | 3,856 | 414.05 | 498 | 23.43 | 360 | 22.55 | | | | | 112 | .69 | 5,158 | 483.58 |
| Oatmeal | do | 6,333 | 211.45 | 10,264 | 481.68 | 15,569 | 228.24 | 9,928 | 370.46 | | | | | 74 | 3.38 | 42,168 | 1,295.21 |
| Onions | do | 15,406 | 411.37 | 105,255 | 5,922.59 | 11,464 | 2,814.21 | 2,749 | 80.75 | 2,080 | 48.49 | 109 | 2.32 | 4,250 | 104.98 | 141,263 | 9,384.71 |
| Potatoes | do | 78,717 | 1,358.81 | 63,179 | 1,777.30 | 22,971 | 559.59 | 21,601 | 428.75 | 4,408 | 61.48 | 158 | 2.62 | | | 191,034 | 4,188.55 |
| Pork | do | 11,349 | 877.19 | 18,500 | 1,364.38 | | | | | | | | | 765 | 57.30 | 30,614 | 2,298.87 |
| | Barrels | 11 | 101.75 | | | | | | | | | | | 3 | | 14 | 101.75 |
| Rice | Pounds | 1,142 | 56.70 | 17,196 | 367.89 | 708 | 82.28 | 2,499 | 149.94 | | | | | 681 | 35.75 | 222,262 | 642.56 |
| Sugar | do | 10,524 | 602.47 | 3,856 | 174.19 | 11,836 | 122.15 | 8,971 | 527.93 | | | | | 1,800 | 79.00 | 36,987 | 1,505.74 |
| Tobacco—Plug | do | 85,745 | 36,014.79 | 9,936 | 4,146.85 | 10,784 | 4,650.40 | 8,394 | 3,520.67 | | | 92 | 41.17 | 4,876 | 1,901.64 | 119,827 | 50,275.52 |
| Smoking | do | 14,039 | 8,111.84 | 1,974 | 1,165.88 | 19,505 | 10,563.14 | 9,607 | 5,607.80 | | | 271 | 136.94 | 3,819 | 1,715.02 | 48,715 | 27,300.62 |
| Tomatoes | Cans | 39,127 | 4,053.85 | 56,338 | 6,836.70 | 122,774 | 10,289.89 | 14,358 | 968.39 | | | 98 | 8.84 | 901 | 4.55 | 233,486 | 22,162.22 |
| Vinegar | Gallons | 56 | 7.04 | 1,856 | 332.28 | 8,881 | 925.52 | 725 | 83.88 | | | | | | | 11,468 | 1,348.72 |
| Yeast | Pounds | 2,080 | 116.56 | 4,290 | 441.38 | 24,070 | 621.30 | 2,011 | 251.38 | | | | | | | 32,451 | 1,430.62 |
| | Cakes | | | | | 8,667 | 880.18 | | | | | | | | | 8,668 | 880.18 |
| Total | | | 84,814.17 | | 113,816.28 | | 56,492.06 | | 16,416.80 | | 112.10 | | 249.42 | | 18,885.25 | | 290,780.08 |

Condemned per enlisted man, $3.01.

## APPENDIX H.

### SUMMARY OF PROPERTY INSPECTIONS FOR THE DECADE.

TABLE A.—*Summary of inspections of property for the decade 1891–1900.*

| Year. | Inspection reports. | | | Articles inspected. | | | |
|---|---|---|---|---|---|---|---|
| | Number received. | By inspectors-general. | By special inspectors. | Total number presented.[1] | Total cost, reported and estimated. | Cost of articles condemned. | Cost of articles retained in service. |
| 1892[2] | 898 | 598 | 300 | 183,554 | $252,330.20 | $201,566.75 | $50,763.45 |
| 1893 | 2,442 | 1,797 | 645 | 1,775,059 | 630,368.86 | 427,695.70 | 202,678.16 |
| 1894 | 2,392 | 2,012 | 380 | 2,150,179 | 755,291.61 | 662,474.75 | 92,816.86 |
| 1895 | 2,212 | 1,871 | 341 | 2,152,003 | 863,271.43 | 685,695.35 | 177,576.08 |
| 1896 | 1,634 | 1,267 | 367 | 4,879,121 | 1,332,206.50 | 1,235,955.65 | 96,250.85 |
| 1897 | 1,731 | 1,438 | 293 | 3,382,068 | 2,459,251.61 | 1,662,956.98 | 796,294.63 |
| 1898 | 1,592 | 1,177 | 415 | 1,779,870 | 1,706,014.93 | 914,669.83 | 791,345.10 |
| 1899 | 3,425 | 2,100 | 1,325 | 9,380,070 | 2,733,686.21 | 2,418,076.27 | 315,609.94 |
| 1900 | 3,521 | 1,800 | 1,721 | 54,134,386 | 10,009,897.93 | 8,689,350.88 | 1,320,547.05 |
| Total | 19,847 | 14,060 | 5,787 | 79,816,330 | 20,742,319.28 | 16,898,442.16 | 3,843,677.12 |
| Average[3] | 2,335 | 1,654 | 681 | 9,390,156 | 2,440,272.85 | 1,988,052.02 | 452,220.88 |
| Per cent of total | ........ | .71 | .29 | ............ | .............. | .81 | .19 |

[1] Including units of weight and measure.

[2] No reports were received at this office prior to February, 1892, and the figures for the fiscal year 1892 are for about five months only.

[3] Average for eight and one-half years.

TABLE B.—*Summary of inspections of public animals for the decade 1891–1900.*

| Year. | Cavalry. | Artillery. | Quartermaster, etc. | Total. | Total cost of animals presented.[1] | Number condemned. | Cost of condemned animals. | Number retained in service. | Cost of animals retained in service. |
|---|---|---|---|---|---|---|---|---|---|
| 1892[2] | 342 | ........ | 186 | 528 | $68,872.32 | 472 | $61,567.68 | 56 | $7,304.64 |
| 1893 | 876 | 61 | 402 | 1,339 | 187,460.00 | 1,108 | 155,120.00 | 231 | 32,340.00 |
| 1894 | 588 | 82 | 327 | 997 | 138,981.47 | 898 | 125,445.89 | 99 | 13,535.58 |
| 1895 | 642 | 51 | 317 | 1,010 | 138,427.57 | 944 | 129,942.69 | 66 | 8,484.88 |
| 1896 | 970 | 101 | 443 | 1,514 | 204,381.30 | 1,332 | 179,055.61 | 182 | 25,325.69 |
| 1897 | 750 | 115 | 425 | 1,290 | 171,217.44 | 1,156 | 154,072.63 | 134 | 17,144.81 |
| 1898 | 710 | 54 | 369 | 1,133 | 161,871.71 | 1,054 | 150,584.98 | 79 | 11,286.73 |
| 1899 | 2,734 | 137 | 3,866 | 6,737 | 693,911.00 | 5,578 | 574,534.00 | 1,159 | 119,377.00 |
| 1900 | 1,227 | 237 | 1,284 | 2,748 | 307,776.00 | 2,347 | 262,864.00 | 401 | 44,912.00 |
| Total | 8,839 | 838 | 7,619 | 17,296 | 2,072,898.81 | 14,889 | 1,793,187.48 | 2,407 | 279,711.33 |
| Average[3] | 1,040 | 99 | 896 | 2,035 | 243,870.45 | 1,752 | 210,963.23 | 283 | 32,907.22 |
| Per cent of total | .51 | .05 | .44 | ........ | .............. | .86 | .86 | .14 | .14 |

[1] Cost is partly as reported and partly estimated.

[2] No reports were received at this office prior to February, 1892, and the figures for the fiscal year 1892 are for about five months only.

[3] Average for eight and one-half years.

It appears that prior to 1892 no record was ever kept of the total amount and value of public property pertaining to the military establishment that was inspected and condemned; nor of the value of that which was presented for condemnation, but which upon being inspected was found more or less serviceable, either with or without repairs, and was consequently retained in the service. But General Orders, No. 8, Adjutant-General's Office, January 29, 1892, required one copy of each inventory and inspection report to be forwarded in all instances to this office; and since that time they have been handled and tabulated here so as to indicate this important and necessary information. The copies of the inventory and inspection reports began to reach this office about the 1st of March, 1892, the earliest bearing date February 10 of that year; so the figures presented in Tables A and B do not entirely cover all the last decade of the century, but they do cover about eight and one-half years, and it is upon this basis that the averages have been calculated. In the beginning the cost price of a great many articles was not stated in the reports, so the original value of the articles of which the cost was not stated had to be estimated upon the basis of the average value of those articles of which the cost was stated. For several years the original cost of most of the articles presented for inspection has been shown by the reports.

Leaving out of consideration (except in totals, averages, and percentages) the fiscal year 1892, for which data for less than six months is available, and considering only the fiscal years for which full data is given, Table A shows that for the period covered 19,847 inventory and inspection reports were received, the extremes being 3,521 in 1900 and 1,592 in 1898, the annual average being 2,335. Of these reports 14,060 (71 per cent) were acted upon by officers of the Inspector-General's Department; extremes, 2,100 in 1899 and 1,177 in 1898; annual average, 1,654. Special inspectors acted upon 5,787 (29 per cent) of these reports; extremes, 1,721 in 1900 and 293 in 1897; annual average, 681. A total of 79,816,330 articles were presented for inspection; extremes, 54,134,386 in 1900 and 1,775,059 in 1893; annual average, 9,390,156. The total cost of all the articles presented was $20,742,319.28; extremes, $10,009,897.93 in 1900 and $630,368.86 in 1893; annual average, $2,440,272.85. The total cost of the articles condemned was $16,898,442.16 (81 per cent of the whole); extremes, $8,689,350.88 in 1900 and $427,695.70 in 1893; annual average, $1,988,052.02. The total cost of the articles retained in the service was $3,843,677.12 (19 per cent of the whole); extremes, $1,320,547.05 in 1900 and $92,816.86 in 1894; annual average, $452,220.83.

Table B shows that for the period covered a total of 17,296 public animals were presented for inspection; extremes, 6,737 in 1899 and 997 in 1894; annual average, 2,035. Of these, 8,839 (51 per cent of the whole) were cavalry horses; extremes, 2,734 in 1899 and 588 in 1894; 838 (5 per cent of the whole) were artillery horses; extremes, 237 in 1900 and 51 in 1895; annual average, 99; 7,619 (44 per cent of the whole) pertained to quartermaster's transportation, etc.; extremes, 3,866 in 1900 and 317 in 1895; annual average, 896. The total cost of animals presented for inspection was $2,072,898.81; extremes, $693,911 in 1898 and $138,427.54 in 1895; annual average, $243,870.45. The total number of animals condemned was 14,889 (86 per cent of the whole); extremes, 5,578 in 1899 and 898 in 1894; annual average, 1,752. The total cost of public animals condemned was $1,793,187.48 (86 per cent of the whole); extremes, $574,534 in 1899 and $125,445.89 in 1894; annual average, $210,963.23. The total number of public animals retained in service was 2,407 (14 per cent of the whole); extremes, 1,159 in 1899 and 66 in 1895; annual average, 283. The total cost of public animals retained in service was $279,711.83 (14 per cent of the whole); extremes, $119,377 in 1899 and $8,484.88 in 1895; annual average, $32,907.22.

## APPENDIX I.

*Inspectors-General of the United States Army from 1778 to 1900.*

| Names. | Rank. | From— | To— | Remarks. |
|---|---|---|---|---|
| Frederick Wm. von Steuben. | Major-general. | May 5, 1778 | Apr. 15, 1784 | He was presented a gold-hilted sword "as a mark of the high sense the Congress entertain of his character and services." Died Nov. 28, 1794. |
| William North ...... | Major ...... | Apr. 15, 1784 | June 25, 1788 | Brigadier-general, adjutant-general, July 19, 1798. Died Jan. 4, 1836. |
| John Stagg, jr ....... | Chief clerk War Department. | June 25, 1788 | Apr. 30, 1790 | Brigade major in the Revolutionary army. Died Dec. 28, 1803. |
| Francis Mentges..... | Colonel..... | Apr. 30, 1790 | Mar. 17, 1792 | Lieutenant-colonel in the Revolutionary army. |
| Henry de Butts...... | Captain..... | Mar. 17, 1792 | Sept. 17, 1792 | Entered the service as ensign in the levies of 1791. |
| Edward Butler...... | .....do...... | Sept. 17, 1792 | Feb. 21, 1793 | Lieutenant in Revolutionary army. Served in St. Clair's campaign, 1791. Died May 6, 1803. |
| Michael Rudolph.... | Major ...... | Feb. 22, 1793 | July 17, 1793 | Brevetted by the Continental Congress for gallantry in leading the forlorn hope at Paulus Hook in 1779. Died 1795. |
| Edward Butler...... | Captain .... | July 18, 1793 | May 13, 1794 | (See above.) |
| John Mills........... | Major ...... | May 13, 1794 | Feb. 27, 1796 | Captain in the Revolutionary army. Died July 8, 1796. |
| Jonathan Haskell ... | .....do...... | Feb. 27, 1796 | May 22, 1798 | Lieutenant in the Revolutionary army. Died Dec. 13, 1814. |
| Edward Butler...... | Captain .... | May 22, 1796 | Feb. 27, 1797 | (See above.) |
| Thomas H. Cushing . | Major ...... | Feb. 27, 1797 | May 22, 1798 | Captain in the Revolutionary army. Brigadier-general, United States Army, July 2, 1812. Died Oct. 19, 1822. |
| Alexander Hamilton | Major-general. | July 19, 1798 | June 15, 1800 | Colonel in the Revolutionary army and principal aid-de-camp to Washington. He was also Commander in Chief of the United States Army during a portion of the time he was Inspector-General. Secretary of the Treasury under Washington. Died July 2, 1804. |
| Thomas H. Cushing . | Major ...... | June 15, 1800 | May 9, 1807 | (See above.) |
| Abimael Y. Nicoll... | .....do....... | Apr. 2, 1807 | Apr. 28, 1812 | |
| Alexander Smyth ... | Brigadier-general. | July 6, 1812 | Mar. 3, 1813 | Was in command of troops in Canada in war of 1812. Member of Congress from Virginia for several terms. Died April 26, 1830. |
| Zebulon M. Pike[1] ... | .....do...... | Mar. 12, 1813 | Apr. 27, 1813 | Killed in the attack on York (now Toronto), Canada, after the capture, by the explosion of the magazine. |
| Abimael Y. Nicoll... | Colonel..... | Mar. 18, 1813 | June 1, 1814 | Resigned from the army June 1, 1814. |
| William H. Winder.. | Brigadier-general. | May 19, 1814 | July 2, 1814 | Commanded American forces at Bladensburg and in defense of Washington in 1814. Died May 24, 1824. |
| Daniel Parker........ | .....do...... | Nov. 22, 1814 | June 1, 1821 | Paymaster-General of the Army June 1, 1821, to May 8, 1822. Died April 5, 1846. |
| John E. Wool........ | Colonel..... | June 1, 1821 | June 25, 1841 | (Senior Inspector-General.) Brigadier-general, June 25, 1841; major-general, May 16, 1862. Brevetted 1814 for gallant conduct in the battle of Plattsburg, in 1826 for ten years' faithful service in one grade, and in 1847 for gallant and meritorious conduct in the battle of Buena Vista, for which he was also thanked (1854) and awarded a sword by resolution of Congress. Died Nov. 10, 1869. |

[1] From the death of General Pike the office of Adjutant and Inspector-General remained vacant (the duties being performed by Col. Abimael Y. Nicoll, Inspector-General) until May 19, 1814, when Gen. W. H. Winder was appointed, and held the office until July 2, after which the office was again vacant until Nov. 22, 1814, when Daniel Parker was appointed.

*Inspectors-General of the United States Army from 1778 to 1900*—Continued.

| Names. | Rank. | From— | To— | Remarks. |
|---|---|---|---|---|
| George Croghan | Colonel | June 25, 1841 | Jan. 8, 1849 | (Senior Inspector-General.) Presented a gold medal "with suitable emblems and devices in testimony of the high sense entertained by Congress of his gallantry and good conduct in defense of Fort Stephenson. Ohio," in 1835, and brevetted for same in 1813. Died Jan. 8, 1849. |
| Sylvester Churchill | do | Jan. 8, 1849 | Aug. 9, 1861 | (Senior Inspector-General.) Brevetted 1847 for gallant and meritorious conduct in the battle of Buena Vista. Died Dec. 7, 1862. |
| Randolph B. Marcy | do | Aug. 9, 1861 | Dec. 11, 1878 | (Senior Inspector-General.) McClellan's chief of staff. Brevetted brigadier-general 1865 for gallant and meritorious service in the field during the civil war, also major-general of volunteers for faithful and meritorious service during the war. Died Nov. 22, 1887. |
|  | Brigadier-general. | Dec. 12, 1878 | Jan. 1, 1881 |  |
| Delos B. Sackett | do | Jan. 2, 1881 | Mar. 8, 1885 | Brevetted 1846 for gallant and meritorious conduct in the battles of Palo Alto and Resaca de la Palma, and in 1865 brigadier-general for gallant and meritorious service in the field during the war, and major-general for faithful and meritorious services during the war. Died Mar. 8, 1885. |
| Nelson H. Davis | do | Mar. 11, 1885 | Sept. 20, 1885 | Brevetted 1847 for gallant and meritorious conduct in the battles of Contreras and Cherubusco, in 1863 for gallant and meritorious conduct in the battle of Gettysburg, in 1864 for gallant and meritorious service in action with Apache Indians in Arizona, in 1865 (brigadier-general) for meritorious and efficient service during the war. Died May 15, 1890. |
| Absalom Baird | do | Sept. 22, 1885 | Aug. 20, 1888 | Brevetted 1863 for gallant and meritorious service in the battle of Chickamauga, Ga., in 1863 for gallant and meritorious service in the battle of Chattanooga, Tenn., in 1865 (brigadier-general) for gallant and meritorious service in the capture of Atlanta, Ga., also in 1865 (major-general) for gallant and meritorious service in the field during the war, and major-general of volunteers for faithful service and distinguished conduct during the Atlanta campaign, and particularly in the battles of Resaca and Jonesboro, and for general good conduct in the command of his division against Savannah. |
| Roger Jones | do | Aug. 20, 1888 | Jan. 26, 1889 | Died Jan. 26, 1889. |
| Joseph C. Breckinridge. | do | Jan. 30. 1899 | .............. | Brevetted in 1864 for gallant and meritorious service in battle before Atlanta, Ga., and in 1865 for gallant and meritorious services during the war. Major-general of volunteers, May 4, 1898; was in Cuba with Lawton's division during the Santiago campaign and in the actions at El Caney and Bloody Ford (where his horse was shot under him) and at San Juan Hill. Was assigned to the command of the separate army in the field at Camp George H. Thomas, Georgia, composed of 44,000 men, and on the breaking up of that camp commanded all the First Army Corps within the United States, with headquarters at Lexington, Ky. Mustered out as major-general of volunteers Nov. 30, 1898. |

## APPENDIX J.

### ANNUAL MANEUVERS IN GERMANY.

The imperial military maneuvers in Germany in the autumn of last year were carried out on a very large scale, three army corps taking part in them. The theater of the mimic warfare was the northern portion of the Black Forest, in the Grand Duchy of Baden, the hilly country about Stuttgart, in the Kingdom of Wurtemberg, and the flat valley of the Rhine south of Strasburg. Parts of the terrane are very mountainous, others very flat, but, on the whole, the ground over which the troops were maneuvered is undulating and very varied and lends itself admirably to the carrying out of the operations of war. And it may be of interest to note a remark on the infantry, cavalry, artillery, and staff by Maj. Gen. A. E. Turner, C. B., R. A., published in the United Service Magazine of January, 1900:

> Throughout this vast army one system of training and the same degree of efficiency exist, and there is no perceptible difference in any essential point between the units of the same description throughout the length and breadth of the German Empire. * * *
>
> The principal events of the maneuvers took place on the 8th, 9th, 11th, and 13th of September. * * *
>
> The attack was carried out with marvelous precision, every roll of ground was utilized, and the advance of some 70,000 men on the position was, to a great extent, concealed. Certainly long practice and experience has made the German officer a wonderful leader of men.
>
> The general points most worthy of notice were the operations of the cavalry far in advance of the main body. Everything was searched. I have always, in the many accounts of German maneuvers, strongly dwelt on the excellence of this arm and on the high degree of energy and professional knowledge possessed by its officers, one and all, for an indifferent or careless officer does not remain long in the German army. Nor is the action of the cavalry by any means confined to what is called in German sicherheitsdienst and aufklärungsdienst. * * *
>
> What was principally remarkable about the artillery was the manner in which it was concealed; the low wheels of the new quick-firing gun, only 4 feet 6 inches high, facilitate this; long lines of guns come into action, the guns being run up into the firing position by hand without showing themselves to the enemy, while their sudden smokeless flash makes the task of finding the range to them one of the greatest difficulty. No cover which can be utilized is despised by the German army; and, as it is laboriously trained to use it, in real warfare it will enjoy an incalculable advantage over an enemy who is not an equal adept in thus protecting his soldiers, whose losses will be entirely out of proportion with its own.
>
> A most careful and lengthy reconnaissance is made of all positions to be attacked, and there is no premature hurry in the advance on them. * * *
>
> *The forward action of artillery.*—Since the war of 1866 the Germans have learned how to use their guns, and year by year they seem to push their artillery more and more to the front and to make it more and more the backbone and "regulator" of a battle. Each infantry division has six batteries, and the Times correspondent, whose letters on these maneuvers would form a most valuable and instructive pamphlet for military students, relates that the whole of these batteries on occasions marched with the advanced guards. The artillery thus comes very early into action at long ranges; it moves after a time to nearer positions, and finally when the assault is being delivered and the attention of the defenders mainly concentrated on the attacking infantry some of the batteries advance to the shortest ranges and fight almost shoulder to shoulder with the infantry, as the guard batteries did at St. Privat and the artillery generally at Beaune la Roland and Loigny Pourpy. The infantry advance never takes place till the preliminary preparations by the artillery is completed; that is, when the enemy's artillery is entirely or nearly silenced. Then its fire is directed on the points selected for the infantry attack. By this the loss of the latter is enormously lessened and their task lightened. * * *
>
> The infantry attack is thus delivered, the firing line in single rank extended at intervals of 1 to 2 paces march on the designated point of attack; the supports, similarly extended, follow at about 200 yards distance. There is little or no firing

till the firing line arrives to about 800 to 900 yards of the objective; here it halts, a heavy fire is poured in, and the supports close in. The reinforced firing line then advances by successive rushes by companies or half battalions to within about 500 yards of the position. In the meantime the second line, which is composed of innumerable small lines of companies, gradually closes up, all in single rank, drums beating and fifes playing. They appear to be moving independently, and the whole country seems covered with them; but with marvelous precision they slowly but surely converge on the objective of attack till they are arranged in a sort of formation of many lines opposite it.

The firing line, followed by the rest, then moves rapidly forward to within 300 yards of the enemy, and here a tremendous fire is poured in. The mass in rear is always closing up. Suddenly one of its companies, followed by all the others, rushes forward, and in a minute a huge swarm, apparently without any formation, rushes upon the enemy, the firing line supporting the assault with a rapid and ceaseless fire. The position is captured, and probably a second attack has to be made on a further one. After the rush it is evident that all cohesion of units must be lost. This condition of things is foreseen and constantly practiced; the men fall in under the nearest officers without any regard to their own companies or battalions or even to their brigades or divisions.

What strikes me perhaps most forcibly at German maneuvers is the enormous difficulty that our general staff labors under in producing useful and practical maneuvers which can give a real picture and tend to instruct our officers in the higher ranks, in comparison with those experienced by the military authorities in countries like Germany, in which the obligation to general service (Allgemeinwehrpflicht) exists, and following upon it the right by law to occupy, every year, a certain tract of country as a maneuver area, the whole resources of which are practically at the disposal of the troops for the time being. In the present instance the opposing forces were from 60 to 70 miles apart when they started. * * * As much transport as is required is impressed locally and well paid for. * * *

Other great advantages are possessed by military commanders in Germany, who go into the field of maneuvers or war with their own staffs and troops, which latter they have watched from the first day that the men joined as recruits and for whose training they are themselves responsible. * * *

As an artilleryman I shall, I hope, be pardoned, if I once more allude to my own arm and conclude by pointing out the enormous increase of power which the German army has obtained by the introduction of quick-firing guns. German artillery officers say that the power of their artillery is more than doubled. They can fire five aimed rounds a minute against two with their former very excellent gun. The ammunition is all "fixed" like a rifle cartridge, whether shrapnel or high explosive. The number of guns per army corps is now 138, and this is to be increased by the addition of howitzer batteries for bombarding covered positions and villages.

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# APPENDIX K.

## WAR DOGS AND AUTOMOBILES.

That small but smartly written Swiss service journal, the Allgemeine Schweizerische Militär-Zeitung, in No. 44 of 1899, gives an excellent description of the annual trials of German war dogs for that year. The points observed in the trials were—

1. Behavior as watchdog (possible marks to be awarded, 6).
2. Returning from a patrol to the leader (possible marks, 5).
3. Going from the leader to the patrol (possible marks, 8).
4. Following the scent or tracks of the leader (possible marks, 6).
5. Lying down or sitting down by order and remaining still until called for by the leader, who in the meantime retired to a spot from whence he could not be seen by the dog (possible marks, 5).

It was not considered necessary to test the dogs in working on the leash, nor in "fetching," this latter accomplishment being of minor importance from a military point of view, and time failed for trials in carrying ammunition, or in looking for wounded, and barking when found. In order to conduct the trials, a company of a Jäger regiment took up position as a picket in a line of outposts.

Behavior as watchdog was tested in the following manner: A double sentry was posted on a road in grounds which could not be overlooked, and the dog and his leader were attached to this post for duty. Two Jägers, dressed to represent an enemy's patrol, then attempted to creep up to the post unperceived from a distance of 300 meters. In the course of the test seven dogs gave due notice of the enemy's approach by growling, five took no notice at all, and four made too much noise and were accordingly awarded half marks only.

For sending messages four dogs at a time were sent by patrols from the picket to four distinct points determined on beforehand, the old dogs to travel a distance of 3 kilometers, the young ones 2½ kilometers, partly along roads, partly through woods, and partly across open cornfields. The dog-leaders remained with the picket. Each dog had to carry messages as follows:

1. From the patrol to the picket.
2. From the picket to the patrol.
3. Back again from the patrol to the picket.
4. From the picket back to the patrol, which by this time had changed position (after sending the dog away the second time) about 300 meters.

Each dog carried in a leathern dispatch pouch a regular form in which the time of departure from and arrival at each post was noted down for each journey, in order to show the length of time taken in carrying the messages. A great improvement was shown in the certainty with which dispatches were carried as compared with the results of the previous years' trials. On an average the kilometer was covered by the dogs in four and one-fourth minutes. Out of 16 dogs which took part this year in the trials, 6 distinguished themselves by their speed. One was not tested in carrying dispatches. All the remainder went well enough from the patrol to their leader at the picket, but did not return from picket to patrol. These latter were therefore struck out of the remainder of the competition as the umpires decided that the carrying of dispatches was the first and indispensable qualification for a "war dog," if he was to be of any real use.

As regards obedience in remaining where they were told, each dog had to remain still at a certain prescribed spot, either sitting or lying down, where he could not see his leader, for at least twenty minutes before the latter fetched him back.

During this test 6 dogs were disobedient, leaving the prescribed spot and returning to their leaders before they were called; the remainder stood the test perfectly. For the test of following the leader's trail, the latter were sent about 600 meters to the front, through wooded ground, and the dog, after the lapse of a few minutes, sent after him. Eight of the competitors failed to reach their leaders, either because they did not attempt to or because they lost the trail.

The following breeds of dogs took part in the trials: Five colleys, 2 German pointers, 4 sheep dogs, 2 Airedale terriers (crossed with German wire-haired terrier), 1 crossbreed (poodle and pointer), 1 crossbreed (setter and mastiff), 1 crossbreed (fox terrier and sheep dog). But the result of the trials tended to show that pure-bred dogs are the best for the purpose, and colleys seemed the most suitable of the various breeds, as they are speedy enough, easily taught, have good scent, and take no notice of game, this last point being of great importance. * * *

Automobiles.

France seems inclined to show other nations the way as regards utilizing automobiles for heavy military work. According to the Beilage zur Deutschen Heeres-Zeitung of the 4th November last, two artillery regiments stationed at Versailles succeeded in transporting a siege gun and ammunition, 25 tons weight in all, from thence to the plateau of Satory, over a road sloping 1 in 10, by means of automobiles, in an hour, a piece of work which would have taken three days to do with artillery horses.

## APPENDIX L.

### THE INSPECTOR-GENERAL'S DEPARTMENT.

[By Maj. J. P. SANGER, Inspector-General, U. S. A.]

The office of Inspector-General dates from December 13, 1777, although Lieut. Col. Mottin de la Balme, a French cavalry officer, was appointed by Congress July 8, 1777, inspector-general of cavalry; and on August 11 M. du Coudray, a French artillery officer, was appointed inspector-general of ordnance and military manufactures with the rank of major-general. It is not probable that either of these officers performed much service as inspectors, for the entire cavalry force consisted of but four regiments, used chiefly as escorts, messengers, and orderlies, while the ordnance and military manufactures were as yet unorganized. De la Balme resigned three months and three days after his appointment, and Du Coudray held his position about one month. He was drowned September 15, while attempting to cross the Schuylkill en route to army headquarters as a volunteer.

On October 26, 1777, General Washington assembled a council composed of 14 general officers, which met on the 29th, and among other questions submitted to it considered the following:

> Will the office of Inspector-General to our Army, for the purpose principally of establishing one uniform set of maneuvers and manual, be advisable as the time of the adjutant-general seems to be totally engaged with other business?

It was apparently the intention that each member of the council should submit his views in writing, but only those of General Sullivan on the subject of the inspectorship have been preserved, and in regard to that he wrote:

> Such an officer will answer an exceedingly good purpose, provided a person who is well versed in the maneuvers has the appointment, and the major and brigadier-generals themselves will take more pains to teach their men to move in large bodies, and perform such maneuvers as the Inspector-General will recommend. If the person appointed should only be acquainted with the trick of parade of a single company or regiment, and has not extended his ideas to the movements of armies, it will be rather a disadvantage than benefit to the Army.[1]

The final decision of the council, which every member signed, was that "such an officer was desirable, the manual of regulations to be first agreed upon by the Commander in Chief, or a board of officers appointed for the purpose." General Conway, one of the members, was born in Ireland but educated in France, and had served many years in the French army. He came over on an engagement with Messrs. Dean and Franklin, who described him as a soldier of high character and abilities, and one of the most skillful disciplinarians in France. He was commissioned brigadier May 13, 1777, joined the army under Washington, who assigned him to the command of a brigade, and participated in the battles of Brandywine and Germantown and the operations around Philadelphia. He now became an aspirant for the position of Inspector-General, and addressed letters to Congress proposing a plan of organization.

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[1] Original manuscript, State Department.

These letters were referred to the board of war, which, on December 12, 1777, reported to Congress that they had considered the letters and that it was expedient to the promotion of discipline and to the reformation of the various abuses which prevailed in the different Departments, that an appointment should be made of an Inspector-General, whose duties should be to determine, with the consent of the Commander in Chief, the instruction, discipline, strength, and condition of all organizations, their accounts, rations, arms, and equipment, and the capacity of all officers; his reports to go to the board of war, and a copy to the majors of regiments, and all complaints and grievances to Congress.[1]

It was further resolved that two inspectors-general be appointed, which resulted in the election of Brig. Gen. Thomas Conway with the rank of major-general; the other was not chosen.

Fortunately for the discipline of the Army and the conduct of military operations, this plan of administering the inspectorship was not carried out. Its effect was to put the Inspector-General in direct communication with Congress and the board of war. In the hands of Conway, and the board of war as then constituted, such a weapon would have been irresistible, and Washington appears to have fully appreciated the danger. On the 2d of January, 1778, he wrote to the President of Congress opposing the appointment of Conway and transmitting an extract from the proceedings of the council of generals, in regard to which he wrote:

> The inclosed extract from the proceedings of a council of general officers will show the office of Inspector-General was a matter not of such modern date as General Conway maintains it to be, and that it was one of the regulations in view to reform the Army.
>
> The foreign officers who had commissions and no commands, and who were of ability, were intended to be recommended to execute it, particularly the Baron d'Arendt, with whom the idea originated, and whose capacity seemed to be well admitted.[2]

The Baron was a Prussian officer and colonel of the German regiment, and served as aid-de-camp to Washington. Conway held the office of Inspector-General until April 28, 1778, when he resigned.

Although Washington did not employ Conway as Inspector-General, he still gave heed to the duties of the office, which ever held a high place in his mind. In a letter of January 28, 1778, to the Congressional committee which visited his camp at Valley Forge, to mature a plan for the better administration of the Army, he wrote:

> In an army like ours the office of Inspector-General, principally for the purpose of instituting and carrying into practice an uniform system of manual and maneuvers, must be extremely useful and advantageous. A number of assistants to this office will be required, as one man would be incapable of superintending the practice of the rules laid down throughout the Army; and unless this were carefully done it

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[1] Journals of Congress.

[2] Writings of Washington, Vol. VI.

would be of little avail to establish them. It would be proper, in my opinion, to have one to each brigade, the benefits resulting from which would greatly overbalance the consideration of expense.[1]

In the meantime, December 1, 1777, Lieutenant-General Baron von Steuben arrived at Portsmouth, N. H., and proceeded to York, Pa., where he tendered his services to Congress as a volunteer. He commenced his military life when a mere child, as the companion of his father, an engineer officer, and became aid-de-camp to Frederick the Great. Congress conferred on him the rank of captain by brevet, in order to guard against any inconveniences which might result were he taken prisoner, and he joined the Army under Washington at Valley Forge, February 23, 1778.

Shortly after his arrival he accepted the appointment of temporary inspector and entered on his duties. The condition of the Army—without sufficient arms, clothing, rations, medicines, money, organization, instruction or discipline—was deplorable in all respects. There was no uniformity, while the short terms of enlistment—three, six, and nine months—kept up a continual flow of men, who, as they left for their homes, carried off with them everything serviceable in their possession. These fluctuations destroyed the significance of divisions, brigades, and regiments, which bore no resemblance to such organizations. It was impossible to obtain correct returns of the troops, the arms, supplies, or, in fact, a reliable report of anything. Drill regulations of any kind were unknown; each colonel and general had a system of his own; there was no military code. The interior economy and administration of regiments and companies did not exist; quartermasters obtained supplies and issued them, when their responsibility ceased, while that of the captains was never assumed; hence deficiencies were not known or explained. Officers and men absented themselves at will; desertion was general, and jealousies, bickerings, misunderstandings, insubordination, extravagance, and waste of all kinds prevailed. Unfed, unpaid, insufficiently sheltered, and literally naked, the Army presented a picture of inefficiency almost beyond remedy. These conditions naturally suggested to such an experienced officer as Steuben the appropriate remedies, and although many of them were beyond his reach and he labored under the disadvantage of not knowing the English language, he set about his task.

To the defects he could not remedy he paid no attention, but devoted himself to completing the organization, instruction, and discipline of the troops. To this end he formed a guard for the General in Chief of 120 men drawn from the line, which he commanded and instructed in person, and which became a school for the inspectors and other officers. The men were completely uniformed, armed, and equipped, and their military bearing and general appearance received much attention. Impressed by their intelligence and aptitude, the short time for preparation, the voluntary and transitory character of the service, and the ill success of other foreign officers who had adhered strictly to European methods, Steuben very sensibly reversed the old system, and, as he says in his memoirs, instead of "eternal manual exercises," the purpose of which was not apparent, but which exhausted the patience of the recruits, he practiced them in simple maneuvers having a palpable object, and in such manner as to make plain the necessity for elementary drill. The good effects of this plan soon became manifest, and on March 28, about a month after he had reported to General Washington, the latter issued an order announcing that the Baron had "obligingly undertaken the exercise of the office of Inspector-General of the Army," and appointed Lieutenant-Colonels Davies, Brooks, Barber, and Mr. Ternant as subinspectors. This order was followed by others requiring colonels and regimental commanders to review and inspect their regiments weekly, brigadiers their brigades fortnightly, and major-generals their divisions. The inspectors were held responsible for the discipline of the troops, and that all instruction conformed strictly to that given by the Baron to the model company, and issued by him with the consent of the General in Chief.

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[1] Writings of Washington, Vol. VI.

On April 30, in a letter to Congress, Washington explained the ill consequences arising from a want of uniformity in discipline and instruction throughout the Army, the necessity for a well-organized inspectorship, and what had been done up to that time by Steuben. In the month following he submitted a plan under which the business of the office was to form a system of manual and maneuvers; to prepare all necessary regulations for the government, discipline, and arrangement of the Army in all its branches; and to see that they were strictly observed. For this purpose the inspectors were to be considered "the instructors and censors of the Army in everything connected with its discipline and management;" the Inspector-General to be under the direction of the General in Chief, his deputies to have charge of the wings or divisions under the major-generals commanding, and the inspectors the brigades. He recommended Steuben for Inspector-General, also General Cadwallader, "of a decisive and independent spirit," Colonel Fleming, and the Barons Arendt and Holtzendorf as assistants.

As a result of this correspondence, Congress on May 5, 1778, approved the plan and appointed Baron Steuben Inspector-General with the rank and pay of major-general. It was also resolved "that there be two ranks of inspectors under the direction of the Inspector-General, the first to superintend two or more brigades, and the other to be charged with the inspection of only one brigade."

Steuben soon began to experience difficulties heretofore unknown. As long as he was a volunteer inspector, without military authority as such, there was no open opposition to his plan of exercises and inspections, to receiving instructions from him personally, or to his practice of turning out the troops for drill which he did at his volition. His appointment as major-general, however, caused much ill feeling among those who were below him in rank, and those of the same grade now objected to the privileges and authority previously exercised by him. Washington also, while fully appreciating the benefits to the Army that had resulted from his efforts, thought that too much authority might be prejudicial to the inspectorship as well as to discipline, and accordingly issued an order, June 15, 1778, specifying the duties of the inspectors, and requiring all rules and regulations to be first approved by him, and then either published in orders or communicated by his direction.

All exercises and maneuvers were to be executed under the immediate orders of the several commanders, the inspectors acting as assistants, and the maneuvers which the Baron had practiced were only to take place after orders specially issued in each case by the General in Chief.

Thus the extensive powers exercised by Steuben when his office was first established, and which were considered necessary in view of the exigencies of the case, were brought within proper limits and the safety of the inspectorship insured. That it would have been overthrown had not Washington placed a wise curb upon the ambition of the Inspector-General, or had he conceded to him the power of enforcing subordination, there can be little doubt. As stated by Alexander Hamilton, at that time aid-de-camp to Washington, in a letter of June, 1778, to Mr. Duer, a member of Congress from New York:

> The novelty of the office excited questions about its boundaries; the extent of its operations alarmed the officers of every rank for their rights. Their jealousies and discontents were rising to a height that threatened to overturn the whole plan.

Steuben continued at Washington's headquarters, where he was most useful. In the execution of his duties he met with obstacles which, according to Hamilton, "were thrown in his way by many of the general officers, incited to it by Lee and Mifflin," and inasmuch as he had not been able to induce Congress to adopt his ideas of the inspectorship, he now insisted on a permanent command, and seemed determined to leave the service altogether if it were not given him. Provided with a letter from Washington to the President of Congress, the Baron laid his case before that body. But he was not successful, and accordingly devoted himself again to his duties as Inspector-General.

Shortly after his arrival at Valley Forge Congress appointed a committee to confer with him. To this committee he submitted a project in which he discussed the causes which led to the establishment of the inspectorship, and in what manner it could best be made to conform with the genius of the people and the constitution of the Army.

Reasoning from the relation of the inspectors-general of France and Prussia, who were accountable to the King alone, he thought the Inspector-General should be answerable to the board of war, to which and the Commander in Chief he was to make a report of his inspections. In the event of differences between the Commander in Chief and the Inspector-General, Congress was to decide.[1] In other words, the Inspector-General was to be a staff officer of the board of war, and only in a qualified way under the control of the Commander in Chief.

This plan was referred to a committee of Congress which reported that, after fully considering it and consulting with the Baron, they recommended, in the form of resolutions, that there should be one Inspector-General with the rank of major-general, an assistant inspector-general with the rank of brigadier-general, subinspectors to be colonels and each to have the troops of three or four States, the offices of brigade major and brigade inspector to be united, and the regulations of the department to be as proposed in the plan. The second resolution, among other things, authorized inspectors to have the troops under arms whenever they desired. The eighth resolution made the Inspector-General and his assistants subject to the orders of Congress, board of war, and the Commander in Chief. The tenth resolution provided that every officer and soldier who so desired should have the privilege of presenting any complaints to the inspector.[2]

The report was referred to Washington August 20, who, with his usual penetration and sagacity, discussed the merits and weak points of the proposed plan and report.[2] He saw that, while it embraced many of the fundamental principles of inspections, it was fatally defective in establishing direct communication between the Inspector-General and the board of war; in making the Inspector-General independent of the Commander in Chief, and the subinspectors independent of the subordinate generals. His letters and observations, together with the report, were received in Congress September 15, whereupon it was—

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[1] Journals of Congress.

[2] Original manuscript in State Department.

> Ordered that the report and observations be referred to the committee of arrangement, and that they be directed to prepare a plan of regulations for the inspectorship, agreeable to the said report and observations.[1]

On Thursday, February 18, the committee made its report, whereupon the following plan of organization and management for the department of the Inspector-General was agreed to: There should be an Inspector-General, who, in all future appointments, should be taken from the line of major-generals, and whose principal duty should be to form a system of regulations for drill and maneuver, service of guards and detachments, and for camp and garrison duty. Together with his assistants he was to review and inspect the troops and receive such returns as the Commander in Chief or officers in command might direct, reporting all defects and deficiencies to the officers ordering the inspection and to the board of war; all regulations whatsoever to be finally established by Congress, but the exigencies of the service requiring it, temporary regulations might be introduced by the Inspector-General, with the approval of the Commander in Chief, such regulations to be communicated to the Army by the Adjutant-General, and transmitted at once to the board of war for the action of Congress; to be as many subinspectors as the Commander in Chief or commander of a detachment, in view of the strength and situation of the Army, might deem necessary, to be taken from the line of lieutenant-colonels and to receive their instructions relative to the department from the Inspector-General; one inspector to each brigade, to be taken from among the majors and the office to be annexed to that of brigade major; that all the officers of the inspectorship having appointments in the line should retain their rights of command, succession, and promotion, but they should not exercise command except on particular occasions and by special assignment of the Commander in Chief; to be exempt from all duties except those of their office; the Inspector-General to be subject to Congress and the Commander in Chief only; and the subinspectors to be also subject to the orders of the division and brigade commanders on whose staffs they were serving.[1]

From this it appears that the views of Washington had been given due weight, and that the dangers to discipline, as well as those which threatened the inspectorship, had been carefully avoided.

On March 25 Steuben submitted to Congress a system of drill regulations for the infantry, which, on the 29th, were approved and adopted.

In the library of the War Department one of the few remaining copies of this book may be seen. It was the first important result of the inspectorship, and was of inestimable benefit to the Army. The scope of this sketch will not permit an analysis of these regulations, but it may be remarked that they partook of the Baron's very practical ideas in regard to the character of the instruction most needed to prepare the troops for the field. Many of the rules prescribed and the customs resulting from them are still observed in the Army; others might be revived with benefit to discipline.

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[1] Journals of Congress.

The regulations having been formally approved, Washington, on April 12, May 4, 12, 22, and June 20, 1779, issued orders making the Inspector-General and his assistant responsible for their observance. The subinspectors, when their divisions were detached, were to perform the duties of Adjutant-General, and the new duties of the brigade majors, which were in effect the same as outlined in Steuben's plan, were defined. In reference to inspections the brigade majors received their instructions from the Inspector-General and from the subinspectors of the divisions to which they belonged. It was doubtless in pursuance of this idea of uniting the duties of Adjutant-General and Inspector-General that Congress, on June 22—

> *Resolved*, That the Adjutant-General, for the time being, be also Assistant Inspector-General.

The organization of the inspectorship being now complete, Washington, on July 1, issued an order prescribing a monthly inspection of the whole Army, and directing that at these inspections the inspectors be furnished, by all company commanders, with exact returns of the troops and of all Government property since last inspection, as well as of that on hand. These returns were consolidated into division returns, for the information of the division commanders. "With what strict scrutiny were the inspections made" relates William North:

> I have seen the Baron and his assistants seven long hours inspecting a brigade of three small regiments. Every man not present must be accounted for. If in camp, sick or well, they were produced or visited; every musket handled and searched, cartridge boxes opened, even the flints and cartridges counted; knapsacks unslung and every article of clothing spread on the soldier's blanket and tested by his little book, whether what he had received from the United States within the year was there, if not, to be accounted for. Hospitals, stores, laboratories, every place and every thing was open to inspection and inspected, and what officer's mind was at ease if losses or expenditures could not, on the day of searching, be fully and fairly accounted for? The inspections were every month, and wonderful was the effect, not only with regard to economy, but in creating a spirit of emulation between different corps. I have known the subalterns of a regiment to appropriate one of their two rations to the bettering the appearance of their men, but this was at a later period of the war, when supplies and payments were more ample and more regular.[1]

On January 12, 1780, Congress abolished the mustering department and transferred the duties to the Inspector-General's Department. The effect of this was to simplify and greatly improve the administration and efficiency of the Army. A division of duties so closely united as to be almost identical, among two sets of officers entirely separated by official lines and having a different responsibility resulted in much friction and confusion and added to the difficulties of command. That the change was in the interest of economy can not be doubted, and on May 7, Steuben submitted a plan which included the duties of both departments. After considering this plan, Washington, on July 14, addressed the following to the President of Congress:

> I inclose a plan which, in conjunction with the Inspector-General, I have framed for the consideration of Congress. It is indispensable the Department should be put in full activity without loss of time—the speedier the decision the better. A large additional allowance, at least nominally, for the inspectors is proposed, but it is a

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[1] Kapp's Life of Steuben.

very imperfect compensation for the additional trouble, and unless some extra privileges and emoluments attend the office it will not be undertaken by officers of rank and ability.[1]

This plan, expressing the concurrent and deliberate views of Washington and Steuben, should be given in full, but it is so lengthy that only a synopsis is permissible.

It provided for an Inspector-General with the rank of major-general, to be taken from the line of major-generals, with 2 aids and 2 secretaries; an Assistant Inspector-General, to be adjutant-general of the main army; an inspector to each division, 1 to the corps of cavalry, 1 to the artillery, 1 to the independent corps, garrisons, and to the militia in service, to be taken, when practicable, from the line of colonels and lieutenant-colonels, and one to each brigade, with the rank of major. The drill regulations and those prescribing discipline, service of guards and detachments, camps and garrisons, to be framed and their execution superintended by the Inspector-General of the Army; the assistant inspector-general to act as Inspector-General during the absence of the latter, and to perform the duties of Adjutant-General; the inspectors and subinspectors to act as adjutants-general of the divisions and brigades, receiving their instructions in reference to inspection duty from the Inspector-General and assistant inspector-general; the troops to be reviewed and mustered by the Inspector-General and his assistants monthly, noting the number and condition of the men, their discipline and drill, the state of the arms, equipments, clothing, rations, etc., rejecting all unserviceable recruits, discharging or transferring to the invalid corps all men disabled in the service, and reporting all abuses, neglects, and deficiencies to the Commander in Chief, the commander of the organization, and to the board of war. The returns of men and material, as required in Washington's order of July 1, were continued, as were the other duties and responsibilities. The Inspector-General, in all that related to inspections, was subject only to Congress, the board of war, and the Commander in Chief; all other inspectors to the commanders with whom they served.

This plan having been discussed, Congress, on September 25, 1781, voted that—

> Whereas the institution of the department hath been found of great utility to the armies of these United States; and experience hath shown that it may be rendered still more useful by an extension of its powers and objects: Therefore,
>
> *Resolved*, That the former establishment by a resolution of February 18, 1779, and all subsequent resolutions relative thereto, be repealed, and the department hereafter have the following form, powers, and privileges.

Then follows the plan proposed by Washington and Steuben, with some changes, and Steuben was continued as Inspector-General, and authorized to appoint all officers necessary to its execution, they being first approved by the Commander in Chief.

Considering the short time the inspectorship had been established, the plan was as satisfactory as could be expected, but was a disappointment to the Baron. Nevertheless he continued actively at work and devised many remedies for the abuses which prevailed throughout the Army. That they were numerous, and that Washington believed in the efficacy of frequent inspections, his correspondence fully proves.

On the surrender of Cornwallis, Steuben recommended a reduction in the number of inspectors and proposed some other changes. Accordingly, on January 10, Congress authorized 1 Inspector-General, to be appointed from the general officers, with 1 secretary and 2 aids to be taken from the line; 1 field officer of the line to be inspector of each separate army, with $80 per month additional pay, and to be allowed to select a captain or subaltern to assist him in the duties of his office. with $10 per month additional pay. The inspectors in the execution of their offices were made subject only to the orders of Congress, the Secretary of War, the Commander in Chief, or commanding officer of a separate army. The authority and duties of the Inspector-General and his assistants continued unchanged.

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[1] Original manuscript in the State Department.

With the capitulation of Cornwallis the operations of the main army may be said to have terminated. Attention was now concentrated on the Southern army, and every effort made to render it efficient, but with little success. The dishonesty and extortion which had characterized the methods of supplying the troops still continued, and finally engaged the attention of Congress, which, on May 7, 1782, provided for the appointment of inspectors of contracts and supplies for the two armies, who were to report any fraud, neglect of duty, or other misconduct by which the public property was wasted or expense unnecessarily incurred.

Under these resolutions Col. Ezekiel Cornell, of Rhode Island, was made inspector of contracts for the main army, and Col. Francis Mentges, of the Fifth Pennsylvania Regiment, the inspector of the Southern army. Both of these officers were acting as inspectors of the aforesaid armies, respectively.

The Peace of Paris was signed January 20, 1783, and a cessation of hostilities was proclaimed by Washington to take effect April 19.

On December 23, Washington resigned his commission in the Army and retired to private life. The same day he addressed a letter to Steuben, the last he ever wrote as Commander in Chief, in which he said:

> * * * I wish to make use of this last moment of my public life to signify in the strongest terms my entire approbation of your conduct, and to express my sense of the obligations the public is under to you for your faithful and meritorious services.

On December 30, 1782, Congress passed a resolution complimentary to Steuben, and on March 24, 1784, he sent in his resignation. In accepting it Congress passed a resolution of thanks "for his great zeal and abilities," and ordered "that a gold-hilted sword be presented to him as a mark of the high sense entertained for his character and services." Washington had previously written, in reply to the Baron's inquiry "whether or no he considered the department of the Inspector-General necessary to the Army, and whether it had been conducted according to his wishes," as follows:

> I give it as my clear opinion that it has been of the greatest importance for reasons too obvious to need enumeration, but more especially for having established one uniform system of maneuvers and regulations in an army composed of the troops of thirteen States (each having its local prejudices), and subject to constant deviations and interruptions from the frequent changes it has undergone. It is equally just to declare that the department under your auspices has been conducted with an intelligence, activity, and zeal not less beneficial to the public than honorary to yourself, and that I have abundant reasons to be satisfied with your abilities and attention to the duties of your office during the four years you have been in service.[1]

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[1] Writings of Washington.

Steuben did not return to Europe, but made his home in Oneida County, N. Y., where he died of paralysis November 28, 1794, at the age of 65 years.

When the Army was disbanded it was divided into a Northern and Southern force. The main body of the Northern army was stationed along the Hudson River, from Newburg to West Point. On the 19th of March, 1784, Steuben appointed Maj. William North, his aid-de-camp, inspector of these troops, and the appointment was confirmed by Congress April 15, when he was made "inspector to the troops remaining in the service and pay of the United States," which consisted at the end of April of 433 infantry and 80 artillery. On the 2d of June Congress ordered all the troops in service to be mustered out, except 25 privates to guard the stores at Fort Pitt and 55 at West Point. Under this act General Knox was disbanded and the command of the "Army" devolved on Captain and Brevet Major Doughty, of the artillery.

From this date to July 31, 1787, the Army was increased and reduced several times; at the latter date it consisted of 1 regiment of infantry and 4 companies of artillery.

On June 25, 1788, it was resolved in Congress—

> That the office of inspector of troops in the service ot the United States immediately cease and be discontinued, and that the Secretary of War report what mode may be most eligible for having the troops inspected in the future.

In accordance with these instructions, he wrote, July 3, 1788, to the President of Congress as follows:

> Agreeably to the order of Congress of the 25th ultimo, I have the honor to report to your excellency that the recruits at present raising in Connecticut, New Jersey, and Pennsylvania will be mustered and inspected previously to their marching by Mr. Stagg, who is employed in this office and is adequate to the business.
>
> That I conceive the troops on the frontiers may be mustered and inspected by the majors on oath.

Mr. John Stagg was the chief clerk of the War Department and an ex-officer of the Continental Army. He was brigade major of Conway's brigade, and of course had performed the duties of inspector. Under these instructions the majors of the regiments acted as inspectors, but Messrs. Stagg and Francis Mentges were inspectors under the Secretary of War.

The War Department was established August 7, and on September 29 Congress enacted a law "to recognize and adapt to the Constitution of the United States the establishment of the troops raised under the resolves of the old Congress."

By the act of April 30, 1790, the infantry regiment had 3 battalions of 4 companies each; the artillery battalion, 4 companies—a total of 1,216 men. Section 4 authorized an inspector "to inspect said troops."

Owing to Indian hostilities a second regiment of infantry was added March 3, 1791, bringing the authorized aggregate strength of the Army to 2,232. On March 4 Arthur St. Clair, of Pennsylvania, was appointed major-general and replaced Harmar in command of the Northwest Territory. The inspector of this army was Mr. F. Mentges, already mentioned.

Owing to the failure of his expedition against the Indians St. Clair resigned March 5, 1792, and on the same day Congress added 3 more infantry regiments for a term not to exceed three years. One of these regiments was given the unique organization of 2 battalions of infantry and 1 squadron of 4 troops of light dragoons.

Provision was made for a general staff, in which there was an "adjutant to do also the duty of inspector and a brigade major to act as deputy." Col. Winthrop Sargent, of Massachusetts, acting assistant adjutant-general of St. Clair's army, was appointed adjutant and inspector, but declined, assigning as a reason that the office was not attended with sufficient rank.

General St. Clair was succeeded by General Wayne, and the Army was organized by Washington into a legion and 4 sublegions, making the aggregate strength of the whole 5,414.

The legionary staff included 1 adjutant and inspector and that of the sublegion 1 brigade major and inspector. As Colonel Sargent declined his appointment, General Wayne appointed Capt. Henry de Butts, of the Fourth Sublegion, acting adjutant and inspector March 17. He was relieved by Capt. Edward Butler, of the Fourth Sublegion, who acted until relieved, February 23, 1793, by Maj. Michael Rudolph, of the Light Dragoons, who was appointed Adjutant and Inspector of the Army. He resigned July 17, 1793, and was succeeded by Capt. Edward Butler, who held the position until May 13, and was followed by Maj. John Mills, Second Sublegion.

The act of March 3, 1795, provided for "an Adjutant-General to do also the duty of Inspector," and gave additional compensation to the brigade majors.

The act of May 30, 1796, provided for 1 inspector to do the duty of Adjutant-General and terminated the existence of the legion. On February 27 Maj. Thomas Cushing, First Infantry, was appointed Inspector of the Army and performed the duties of Adjutant-General.

The act of March 3, 1797, repealed the foregoing act and provided for 1 brigadier-general, to choose his brigade major from the captains of the line. As Major Cushing had not relinquished his rank in the line upon receiving the commission of inspector, he continued to perform the duties of his office by detail.

By the act of May 22, 1798, the brigadier-general was authorized to choose his brigade major and inspector from among any of the commissioned officers in the line of the Army.

About this time our difficulties with France assumed a threatening aspect, and Congress authorized a provisional army, the organization of which followed the principles observed toward the end of the Revolution. The troops formed brigades and divisions. The Adjutant-General was deputy to the Inspector-General. The duties performed by the inspectors were generally such as devolved on them during the Revolution and since. All inspectors were given additional pay.

On July 3 Washington was made Commander in Chief, and on the 18th Alexander Hamilton was appointed Inspector-General with the rank of major-general. In a letter addressed to the Secretary of War July 4 Washington gave his views at length respecting the importance of the general staff to the welfare of the Army.

Referring to the Inspector-General he wrote:

> If the Inspector-General is not an officer of great respectability of character, firm and strict in discharging the duties of the trust reposed in him, or if he be too pliant in his disposition, he will most assuredly be imposed upon and the efficient strength and condition of the Army will not be known to the Commander in Chief. Of course he may form his plans upon erroneous calculations and commit fatal mistakes.

Hamilton selected as his aids Capt. George Izard and Lieut. Ethan Allen Brown. Jacob Brown, who became a major-general in 1812 and Commander of the Army, was his military secretary.

A few days after receiving his commission, July 28, Hamilton entered upon his duties, which far exceeded in their variety and scope those of any other officer of the Army. Nothing escaped his attention. He was practically at the head of the War Department and chief of staff, both the Secretary of War and Washington placing unbounded confidence in his abilities, his patriotism, and integrity. The scope of this sketch will not allow a recital of the many important services rendered by Hamilton and his assistants. On February 4 he was invested with the command of all the troops along the Northern Lakes and in the Northwest Territory. Among the many objects which he had under consideration was the plan of a military academy, which had also been suggested by Steuben, and had repeatedly received the consideration of the Government, but without result.

He submitted his plan to Washington, who replied under date of December 12, 1779, commending the idea, but declining to make any observations on the details of the plan.

This, the last letter written by the "Father of his country" before his death, which followed two days later, suggests the reflection that the last letter written by him at the close of the Revolution and just before resigning his commission, was addressed to the Inspector-General of the Army, the Baron Steuben. Like Hamilton, Steuben had been appointed to his office at the request of Washington, and both shared in the fullest degree his confidence and affection.

As our difficulties with the French Republic now seemed in the way of adjustment, Congress, May 14, 1800, reduced the Army. On May 13 Hamilton had requested leave to resign his commission June 1, but this was not granted, as it was thought expedient that the larger bodies of troops at different stations should be mustered out by him in person. His resignation was finally accepted June 15. He, as well as Steuben, was elected president-general of the Society of the Cincinnati.

On the resignation of Hamilton, Major Cushing of the First Infantry, who had been Inspector and Adjutant-General before him, and who was a division inspector of the provisional army, once more resumed the office of Inspector of the Army. He continued to fill the office by detail until Congress reestablished it in 1802. The office of Adjutant-General having been discontinued and the reduction of the Army completed, the duties which had devolved on him were transferred to the Inspector, and the duties of inspection prescribed in orders from the Headquarters of the Army of August 19, 1800.

On November 30 the country was divided into twelve districts, to be commanded by regimental and battalion commanders. Musters and inspections were to be made monthly by the district commanders when the regular inspecting officers could not attend. The order is noteworthy in prescribing that "the muster and inspection of a garrison should not be made by any officer belonging to it."

On the resignation of Hamilton, Brig. Gen. James Wilkinson became the senior officer of the Army and so remained until March 27, 1812. Through all this period he had immediate command of the Army, the headquarters of which were at various points, depending on his movements. The Adjutant and Inspector of the Army accompanied him or not, as might be directed, and performed his duties generally under his orders, although sometimes employed by the Secretary of War.

The injustice of assigning to an officer detailed from the line, without extra compensation, the arduous duties of Adjutant and Inspector, induced Congress on March 16, 1802, to again establish that office by law, and Major Cushing was appointed to it March 26, and held the position to September 7, 1805. Meanwhile, April 1, 1802, he was promoted lieutenant-colonel of his regiment.

Under the act of April 12, 1808, the Army was increased to 9,921 aggregate, and two inspectors to be taken from the line were authorized. On April 2 Colonel Cushing was succeeded by Maj. Abimael Nicoll of the artillery.

From the close of the Revolution to the year 1808 the Army was subjected, as has been shown, to many changes. There were no printed regulations other than those prepared by Steuben. Efforts had been made by Hamilton, Pinckney, and others to revise the drill books and to compile regulations, but their work was not published. The systems which prevailed at the close of the Revolution continued, modified by such regulations and orders as circumstances suggested.

In February, 1810, Col. Alexander Smyth, of the regiment of riflemen, compiled a system of infantry exercises and maneuvers, chiefly from French sources, which he was directed to test with the troops in camp near Washington, "there being," so says the order, "no established system for the Army of the United States."

Owing to the difficulties growing out of the Napoleonic wars, the refusal of the British to evacuate the posts surrendered by the Treaty of Paris, and the depredations and insults of her cruisers, Congress on on December 24, 1811, increased the Army. The staff included one Inspector-General with rank of brigadier-general, with two assistants to be taken from the line of lieutenant-colonels.

On May 4, 1812, the following regulations defining the duties of the Inspector-General were issued by the Secretary of War:

> * * * It will be the duty of the Inspector-General to organize the Army; to superintend and enforce discipline; to visit and inspect camps, cantonments, quarters, prisons, places of arms, and hospitals; to make stated and unexpected inspections of troops, arms, equipments, clothing, ammunition, and horses; to make inspections, returns, and confidential reports relative to the state and discipline of the Army; to designate men and horses unfit for service or the fatigues of war, that the former may be discharged or sent to garrisons, and the latter sold; to examine the books of quartermasters, paymasters, and companies, and ascertain the balances; and to prescribe forms of returns exhibiting all the wants of the Army.

These regulations are a summary of the duties which since its establishment had gradually devolved upon the department.

On May 16 the President was authorized to appoint, from the captains and subalterns of the line, one subinspector to each brigade, with the additional monthly pay of $24.

On June 18 war was declared against Great Britain, and on the 26th the Army was given a more perfect organization, comprising a general staff, medical staff, ordnance department, quartermaster's department, corps of engineers, 4 regiments of artillery, 2 of dragoons, 1 of riflemen, and 25 of infantry, an aggregate of 35,752. The country was divided into nine military districts, each with a district staff, which included an inspector. General Dearborn was the senior officer and Commanding-General during the war.

By the act of July 6, 1812, the President was authorized to appoint to any army of the United States other than that in which the Inspector-

General was serving, one deputy inspector-general, to be taken from the line with increased pay, and such number of assistant deputies as the service might require.

On July 6 Colonel Smyth was appointed Inspector-General, and on July 14 the Secretary of War issued instructions merging temporarily the offices of Adjutant and Inspector-General with the Adjutant-General's Department, the duties of both to be performed under the direction of the Adjutant-General, to whom Major Nicoll was appointed assistant. Capt. William King of the Fifteenth Infantry was made assistant to the Inspector-General. In September General Smyth was given a brigade in the Army along the Niagara River, commanded by Major-General Van Rensselaer of the New York militia. On the resignation of that officer after the battle of Queenstown, the command passed to General Smyth.

The act of March 3, 1813, organizing the general staff, provided that the Adjutant-General's and Inspector-General's departments should consist of 1 Adjutant and Inspector General with the rank of brigadier-general; 8 adjutants-general and 8 inspectors-general with the brevet rank, pay, etc., of colonel; 16 assistant adjutants-general and 16 assistant inspectors-general with the brevet rank, pay, etc., of majors, to be taken from the line or not, as the President might deem expedient. The President was also empowered to assign 1 of the brigadier-generals to the principal Army to act as Adjutant and Inspector of such Army. As this act discontinued the offices of Adjutant-General and Inspector-General, it was held that General Smyth, having no commission in the line, was disbanded and no longer an officer of the Army. He sought relief from Congress, but was unsuccessful, and ceased to be an officer March 3, 1813. The most notable service rendered by him while Inspector-General was the preparation of regulations for the field service, maneuver, and conduct of infantry, a copy of which may be seen in the library of the War Department.

On March 12 Brig. Gen. Zebulon M. Pike was appointed Adjutant and Inspector to the Army commanded by General Dearborn, but was killed by the explosion of a mine in the attack on the British fortifications at York, Upper Canada, April 13.

From the death of General Pike to May 19, 1814, the office of Adjutant and Inspector General of the Army remained vacant, the affairs of the two branches being in charge of Colonel Nicoll, Inspector-General, and Maj. C. K. Gardner, assistant adjutant-general, respectively.

On May 19 Brig. Gen. W. H. Winder was appointed Adjutant and Inspector of the Army, and chief of staff to the Northern Army; on July 2 he was assigned to the command of the Tenth military district. On the reduction of the Army in June, 1815, he retired from service and resumed the practice of the law at his home in the city of Baltimore. He died May 24, 1824.

Meantime Col. A. Y. Nicoll, who had been in charge of the inspector's office in the War Department, resigned June 1, 1814, and was succeeded by Col. John R. Bell, Inspector-General, who was appointed major and assistant inspector-general July 29, 1813. On November 22, 1814, Mr. Daniel Parker, of Massachusetts, the chief clerk of the War Department, was appointed Adjutant and Inspector General of the Army.

On the reduction of the Army in 1815 the 8 inspectors-general and 16 assistant inspectors-general were discharged and 4 brigade inspectors, to be taken from the line of the Army, substituted. No provision was made for continuing the office of Adjutant and Inspector General of the Army, but under the discretion given the President he retained provisionally 1 adjutant and inspector general, and other staff officers. In March the ten military districts were replaced by nine military departments, forming a northern and a southern division, each division and department having an inspector, generally selected by its commander.

On December 27 the Secretary of War suggested to the Military Committee of the House the expediency of providing by law for the staff appointments provisionally retained by President Madison. This led to the act of April 24, 1816, organizing the general staff, which recognized and made permanent those officers, and provided for 1 Adjutant and Inspector General of the Army, 1 inspector-general of each division, and an assistant inspector-general to every brigade, to supersede the inspectors authorized by the act of March 3, 1815, and to be selected from the line of the Army or from civil life, with the rank, pay, and emoluments provided by the act of March 3, 1813. Colonels Hayne, of the dragoons, and Wool, of the infantry, were announced as inspectors-general, and Captains J. M. Davis, William McDonald, and G. H. Manigault, of the infantry; Francis S. Belton, formerly of the dragoons, but now in civil life, and John Biddle, of the artillery, as assistant inspectors-general.

By the act of April 14, 1818, the pay of division inspectors was made equal to the pay of division adjutants-general. The administration of inspectors continued unchanged until October, 1820, when, by orders, all assistant inspectors-general were placed under the division commanders acting through the division inspectors.

By the act of March 2, 1821, the Army was reduced and reorganized. The office of Adjutant and Inspector General was abolished, and but two inspectors-general, with the rank, pay, and emoluments of colonels of cavalry, authorized. Colonels Wool and Gadsden (the latter appointed October 1, 1820, but not confirmed) were continued as inspectors. It was their duty to make a complete annual inspection of the Army under the orders of the General Commanding, the troops, posts, and other establishments being equitably divided between them.

On May 17, 1821, an order was issued by the President substituting an eastern and western department for the two divisions into which the country was divided in 1815. In August Colonel Gadsden was appointed Adjutant-General, and in November Maj. S. B. Archer, of the artillery, was appointed to succeed him.

In December the inspections were specialized, the infantry being assigned to Colonel Wool, and the artillery, arsenals, foundries, and manufactories of arms to Colonel Archer. This was a departure from the practice previously observed, under which there was no division of inspections according to the previous service of inspectors.

During the years 1823 and 1824 additional duties were imposed on inspectors in reference to returns, reports, accounts, statements, and inventories of public property, and they were held responsible for all estimates for supplies, which were to be made on consultation with post commander. When not engaged inspecting, they were required to take station at Army Headquarters.

On March 2 the order specializing the inspections was revoked, and the two inspectors were directed to alternate in the annual inspections which were to be made under the orders of the Commanding General. No reasons for this change are given in the order, which was doubtless issued to more perfectly equalize the duties. The commandant of engineers was made inspector of the Military Academy.

By the act of March 3, 1825, authorizing the sale of unserviceable ordnance, arms, and military supplies, Congress designated inspectors-general as primarily the proper officers to inspect public property with a view to its elimination from service. By paragraph 4 of General Orders, 58, series of 1825, such inspections were to be "made by an inspector-general when practicable."

On December 11, 1825, Colonel Archer died, and was succeeded, December 31, by George Croghan, of Kentucky, formerly lieutenant-colonel of the Fifteenth Infantry, and renowned for the defense of Fort Sandusky, Ohio, in 1813, against the British and Indians.

In April, 1829, inspectors-general were authorized to discharge soldiers on certificate of disability, a power previously exercised by them.

On May 19, 1837, the two great departments were changed into divisions, with different limits, and divided into seven geographical departments. To each division one of the inspectors-general was assigned as chief of staff and to perform the duties of adjutant and inspector-general. The act of July 5, 1838, having added 2 assistant adjutants-general with brevet rank of major and 4 with rank of captain, and required them to perform the duties of assistant inspectors, the 2 inspectors-general were returned to the Headquarters of the Army December 13.

On June 25 Brevet Brigadier-General Wool was appointed full brigadier, and in December, 1839, was succeeded by Major Churchill, of the artillery.

In May, 1842, the following important addition to the duties of inspectors was made by the Secretary of War, Mr. John C. Spencer:

> * * * II. It is made the duty of the inspectors-general, or officers acting as inspectors, carefully to examine and inspect all supplies and materials procured for the construction of forts, or for harbor and river improvements, and all the means applicable thereto, and the number and description of vessels, boats, machinery, and instruments, etc., and they will inquire into all contracts for supplies and materials of all kinds in the different departments, and whether the articles furnished conform to such contracts, and also into contracts made by the Quartermaster's Department for the transportation of troops and stores. The results of these inspections will be forthwith reported, as provided in paragraph 835.

On August 23, 1842, an act of Congress abolished one of the inspectors-general, but on January 12, 1846, this act was repealed. During this period both inspectors continued in office, and were for a time on duty with the Army in Mexico.

In August, 1848, General Orders, 49, divided the country into two military divisions, the Eastern consisting of four departments and the Western of five departments. There were, in addition, two separate departments, Nos. 10 and 11, from which, in October, was formed the third or Pacific Division. This arrangement of the country continued until October 31, 1853, when seven military departments were substituted for it.

Colonel Croghan died January 8, 1849, and was succeeded January 26 by Capt. James Duncan, Second Artillery, who died July 3, and was followed June 10, 1850, by Maj. George A. McCall, Third Infantry.

In May, on the accession of General Scott to the command of the Army, the inspectors-general were ordered to report to him by letter.

On October 16 General Churchill was assigned as inspector of the Eastern Division, Colonel McCall of the Pacific Division, and Bvt. Col. Samuel S. Cooper, assistant inspector-general to the Western Division. On December 17 the order was revoked, and the inspectors were again attached to Army Headquarters, but ordered to inspect the three divisions in regular rotation, after which they were to report in person to the Commanding General. Colonel McCall resigned April 29, 1853, and was succeeded by Capt. J. K. Mansfield, of the engineers, May 28.

No change in the number of inspectors took place between 1842 and 1861, but on March 6, 1860, Bvt. Col. Joseph E. Johnston, of the First Cavalry, was assigned to duty as Acting Inspector-General of the Army, according to his brevet rank. On May 14, 1861, Colonel Mansfield was appointed brigadier-general, and was succeeded on the same date by Capt. and Bvt. Lieut. Col. Henry L. Scott, of the Fourth Infantry.

On August 3, 1861, five assistant inspectors-general with rank of major and on August 6 two inspectors-general with the rank of colonel were added by Congress.

No change in the number of regular inspectors occurred until 1864; but by the act of July 17, 1862, an inspector-general with the provisional rank and pay of lieutenant-colonel was provided for each army corps. The names of those appointed under the act will be found in General Orders, 181, of 1862.

No change in the organization of the department occurred during the war. In 1861 Colonel Marcy was appointed brigadier-general and chief of staff to the Army of the Potomac, and so served to November, 1862. Colonel Sacket was inspector-general of that army to 1863, when he was succeeded by Colonel Schriver. Baird, Buford, and Totten were general officers commanding troops, while Hardie, Davis, Jones, and Van Rensselaer were on duty as inspectors. When not assigned to one of the armies in the field they were under the orders of the Secretary of War. Armies, army corps, divisions, brigades, geographical divisions, and departments had inspectors-general, assistant or acting assistant inspectors-general, usually selected by the several commanders, and all parts of the Army were subject to frequent inspections. The number of geographical departments increased until in 1865 there were 29 departments, forming 5 divisions, and also a number of districts, nearly all of which had inspectors.

On January 22, 1866, the War Department published in General Orders, No. 5 regulations relating to the inspection service, which prescribed the ordinary subjects of inspection and the general principles to be observed. This order, based on the wide experience of the Department up to date, defined the "ordinary duties of inspection" to be—

> the condition as to efficiency, discipline, supplies, etc., of bodies of troops, and the resources, geographical features, lines of communication and supply, the military wants, etc., of any section of the country; the military status in any field of operations; the condition and supply of military materials of various classes; the condition of the administrative or disbursing departments of the service; the efficiency and conduct of military commanders and agents; the cause of failure or delay in movements or operations, of losses by accidents, disasters, etc., and, in general, all matters pertaining to the military art or having interest in a military point of view.

In the ordinary discharge of the duties, the sphere of inquiry was thus made to include every branch of military affairs, being defined and limited only in specific cases by the orders issued. This order and the circular of November 2, 1868, are fundamental, and have been the basis of all subsequent regulations and orders affecting the department.

The act of July 28, 1866, fixed the number of inspectors-general with rank of colonel at four; assistant inspectors-general with rank of lieutenant-colonel at three, and the number with rank of major at two.

In October, 1868, all the inspectors and assistant inspectors-general were assigned to divisions and departments except Colonel Schriver, who was placed in charge of the bureau and made inspector of the Military Academy. Selections for acting inspectors were to be made from the grades of field officers who had served not less than ten years. The inspectors of departments were made subordinate to division inspectors, from whom they were to receive instructions relative to the manner of performing their duties.

The act approved March 3, 1869, prohibited any new appointments or promotions in the department. In April the stations of inspectors were changed, and Colonel Marcy was assigned as Inspector-General at Army Headquarters and Colonel Schriver with the Secretary of War. At the same time department commanders were ordered to make inspections of the troops and posts in person when practicable.

By an act approved June 8, 1872, the President was authorized to appoint Lieutenant-Colonel Davis to the rank and place he would have had if promoted at the time of Colonel Hardie's appointment. This act increased the number of colonels to 5, but provided that there should be no promotion to that grade until the number of colonels was reduced to 4.

In October, 1872, the 5 inspectors-general were assigned to stations, but performed their duties under the orders of the Secretary of War and General of the Army; the 3 assistant inspectors-general went to the headquarters of the three divisions. Field officers of the line were detailed as department inspectors.

In January, 1873, orders were issued excepting from inspection by department or division inspectors all engineer establishments, officers, or agents. The act of March 3, 1873, established the military prison, and required one of the inspectors-general to visit and inspect it at least once in three months.

In April, 1874, the act providing for the inspection of disbursements was passed. It embodied a principle, previously recognized by Congress, "that officers detailed for this duty should not be in any way connected with the department or corps making the disbursement." This act was at first construed to require monthly inspections, and imposed most arduous duties on all inspectors, who were made responsible for any defalcation or misapplication of the public money or property which "an active vigilance on their part might have detected." It is difficult to imagine a more unjust requirement than this, or one more clearly unintended by the law, which was not designed to prevent frauds or to punish criminals, but to determine the necessity, propriety, and economy of disbursements, and whether officers complied with the law in keeping their accounts and making their deposits. In June, 1874, inspections of disbursements were ordered to be made bimonthly.

By the act of June 23, 1874, reorganizing the staff of the Army, the Inspector-General's Department was to consist of 1 colonel, 2 lieutenant-colonels, and 2 majors, and not to exceed 4 line officers to act as inspectors-general; and no more appointments were to be made until the number of inspectors-general was reduced to 5, but no officer then in service was to be reduced in rank or mustered out. This law settled in the affirmative the question as to whether the inspectors-general constituted a department, about which there had been some variance of opinion.

In April, 1876, the Secretary of War directed the Inspector-General to report to the General of the Army, and to be under him in all matters relating to military control and discipline. In May a reassignment of the inspectors was made, by which two were ordered to Army Headquarters and the others to the three divisions. Reports of the inspection of troops and military posts were to be forwarded through regular channels to the Inspector-General's Office, and inspectors were ordered to note on such reports the remedies applied, and all superior commanders to indorse on them their action, "for the information of the General of the Army." In July the inspections of disbursements were ordered to be made quarterly, and the annual inspection of national cemeteries required by law was assigned to this department, but in 1879 it was dispensed with unless specially ordered.

Congress having declared by the act of June 16, 1874, that the inspectors-general constituted a department, and the disproportion between the rank of the senior Inspector-General, or head of the department, and that of the other chiefs of bureau having been pointed out, the act of December 12, 1878, conferred on the senior Inspector-General the rank of brigadier-general, and fixed the number of colonels at 3, lieutenant-colonels 2, and majors 1.

In August, 1879, it was ordered by the Secretary of War that every post, station, and command of the Army should thereafter be inspected at least once each year by division and department inspectors under the direction of their respective commanders, and that in addition, post, station, and other permanent commanders should make similar inspections, annually, between September 1 and 5, and forward the reports to the Inspector-General's Office. This order published a blank form of report, which all officers making inspections were required to use.

Between May, 1878, and September, 1879, post schools and post cemeteries were made special subjects of inspection, and inspectors were required to have destroyed in their presence all unserviceable articles having no money value at the place where inspected.

By the act of March 3, 1883, it was made the duty of the Inspector-General of the Army to inspect the Soldier's Home in person once each year.

By the act of February 5, 1885, the department was given its present organization.

March 8, 1885, General Sacket died and was succeeded on the 11th by Col. N. H. Davis, who retired September 23, and was followed by Col. A. Baird.

In August inspections of disbursements were ordered to be made once every four months; in March, 1886, amendments of the regulations were made prescribing the manner of such inspections, and in June the inspection of the military departments of colleges was assigned.

The Hospital Corps having been organized by the act of March 1, 1887, orders were issued in August establishing the rules and regulations affecting it, and inspectors-general were required to examine into the efficiency of its members and of the company litter bearers.

On August 20, 1888, General Baird was retired, and was succeeded by Col. Roger Jones the same date. General Jones died January 26, 1889, and was succeeded by Col. J. C. Breckinridge January 30, 1889.

In January, 1889, the inspection of the supply division of the War Department, and in November the annual inspection of the militia were assigned to the department.

Between 1889 and 1894 many other important orders, regulations, and decisions have been issued affecting the duties of the department, which culminated in the amendment of paragraph 955, Army Regulations, by General Orders, No. 38, of 1890, which was the same in spirit as General Orders, No. 84, of 1879, and General Orders, No. 17, of 1882, under which the entire military establishment was to be inspected annually, the public works under engineer officers alone excepted. They, however, were now included, and remained on the list of inspections to July 5, when, by General Orders, No. 45, of 1892, they were again excepted.

By General Orders, No. 23, the Bureau of Information was established, and shortly after the inspection of the militia passed under the supervision of the Adjutant-General.

The last important duty assigned the department is the annual inspection of the National Homes for Disabled Volunteer Soldiers, prescribed by the act of August 18, 1894.

# REPORT OF THE JUDGE-ADVOCATE-GENERAL.

# REPORT

OF THE

# JUDGE-ADVOCATE-GENERAL, U. S. A.

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WAR DEPARTMENT,
JUDGE-ADVOCATE-GENERAL'S OFFICE,
*Washington, D. C., September 25, 1900.*

Hon. ELIHU ROOT,
*Secretary of War.*

SIR: I have the honor to submit the annual report of the Judge-Advocate-General's Department for the year ending June 30, 1900.

| | |
|---|---|
| Commissioned officers tried by general court-martial: | |
| Regulars: (convicted 7; acquitted 2; sentence or acquittal disapproved 2) | 11 |
| Volunteers: (convicted 19; acquitted 3; sentence or acquittal disapproved 2) | 24 |
| Cadets tried by general court-martial (convicted) | 4 |
| Enlisted men tried by general court-martial: | |
| Regulars (convicted 4984; acquitted 376; sentence or acquittal disapproved 64) | 5424 |
| Volunteers (convicted 1036; acquitted 123; sentence or acquittal disapproved 35) | 1194 |
| Civilians tried by general court-martial: | |
| Those serving with the Army in the field (convicted 13; acquitted 2) | 15 |
| Discharged men held as general prisoners (convicted 4) | 4 |
| Tried under Forty-fifth and Forty-sixth Articles of War | 4 |
| Total trials by general court-martial | 6680 |

The following table shows, approximately, the number of convictions in the Regular Army of different offences by general courts-martial during the year ending June 30, 1900:

| | |
|---|---|
| Seventeenth Article of War: | |
| Losing arms | 11 |
| Losing accoutrements | 30 |
| Losing clothing | 19 |
| Losing Government property | 1 |
| Selling arms | 2 |
| Selling accoutrements | 3 |
| Selling clothing | 58 |
| Spoiling horse, arms, accoutrements, etc | 2 |
| Twentieth Article of War: | |
| Disrespect to commanding officer | 72 |
| Twenty-first Article of War: | |
| Assaulting superior officer | 6 |
| Disobeying superior officer | 330 |
| Disrespectful or threatening language to superior officer | 6 |
| Twenty-second Article of War: | |
| Inciting mutiny | 2 |
| Joining in mutiny | 2 |

| | |
|---|---|
| Twenty-fourth Article of War: | |
| Disobeying a commissioned officer quelling a fray | 7 |
| Disobeying noncommissioned officer quelling a fray | 2 |
| Disobeying noncommissioned officer when ordered into arrest | 1 |
| Drawing weapon upon noncommissioned officer quelling a fray | 3 |
| Resisting commissioned officer quelling a fray | 1 |
| Resisting noncommissioned officer quelling a fray | 4 |
| Thirty-first Article of War: | |
| Lying out of camp or quarters | 6 |
| Thirty-second Article of War: | |
| Absence without leave | 911 |
| Thirty-third Article of War: | |
| Failure to attend drill, roll call, etc | 495 |
| Leaving ranks without permission | 1 |
| Thirty-fourth Article of War: | |
| Found one mile from camp without leave | 2 |
| Thirty-fifth Article of War: | |
| Failing to retire to quarters | 4 |
| Thirty-eighth Article of War: | |
| Drunkenness on duty | 676 |
| Thirty-ninth Article of War: | |
| Quitting post | 106 |
| Sleeping on post | 296 |
| Fortieth Article of War: | |
| Quitting company | 1 |
| Quitting guard | 179 |
| Forty-second Article of War: | |
| Abandoning outpost | 2 |
| Cowardice | 10 |
| Deserting in face of enemy | 1 |
| Misbehavior before the enemy | 7 |
| Quitting post to plunder and pillage | 1 |
| Forty-seventh Article of War: | |
| Desertion | 444 |
| Fiftieth Article of War: | |
| Enlisting without a discharge | 1 |
| Fifty-fifth Article of War: | |
| Disorderly in quarters | 1 |
| Fifty-sixth Article of War: | |
| Robbery of person bringing provisions | 1 |
| Fifty-eighth Article of War: | |
| Aiding and abetting robbery | 2 |
| Assault and robbery | 1 |
| Assault with intent to kill | 8 |
| Assault and battery with intent to commit rape | 2 |
| Assisting in hiding stolen goods | 1 |
| Burglary | 5 |
| Larceny | 63 |
| Manslaughter | 3 |
| Murder | 5 |
| Rape | 3 |
| Robbery | 37 |
| Sixtieth Article of War: | |
| Embezzlement | 2 |
| Larceny | 41 |
| Selling Government property | 19 |
| Wrongful disposition of property | 1 |
| Sixty-first Article of War: | |
| Conduct unbecoming an officer and a gentleman | 5 |
| Sixty-second Article of War: | |
| Absence without leave, not chargeable under the thirty-second article of War | 86 |
| Abusing noncommissioned officer | 5 |
| Abuse of authority | 3 |
| Abusing public animal | 12 |
| Aiding and abetting desertion | 1 |
| Aiding and abetting larceny | 11 |

Sixty-second Article of War—Continued.

| | |
|---|---|
| Aiding and abetting robbery | 3 |
| Aiding prisoner to escape | 11 |
| Allowing prisoner to escape | 30 |
| Allowing himself to be captured and held a prisoner by insurgents | 3 |
| Alteration of instrument | 2 |
| Assault | 118 |
| Assault and battery | 61 |
| Assault upon noncommissioned officer | 32 |
| Assault upon noncommissioned officer in performance of duty | 56 |
| Assault upon sentry | 9 |
| Assault with dangerous or deadly weapon | 27 |
| Assault with intent to do bodily harm | 22 |
| Assault with intent to kill | 20 |
| Assault with intent to rape | 5 |
| Attempt at burglary | 2 |
| Attempt to commit sodomy | 4 |
| Attempt to defraud a private party | 6 |
| Attempt to defraud the Government | 3 |
| Attempt to destroy private property | 2 |
| Attempt to escape from guardhouse or confinement | 18 |
| Attempt to leave post without permission | 6 |
| Begging | 3 |
| Breach of arrest | 221 |
| Breach of parole | 6 |
| Breach of trust | 8 |
| Breaking open locker | 3 |
| Bribery | 12 |
| Burglary | 5 |
| Careless handling of loaded firearms | 10 |
| Carrying concealed weapons | 8 |
| Committing a nuisance | 36 |
| Conduct causing arrest by civil authorities | 2 |
| Conspiracy | 8 |
| Contempt of court | 1 |
| Creating an alarm in camp | 10 |
| Creating a disturbance | 56 |
| Creating disturbance in guardhouse | 4 |
| Defrauding private parties | 7 |
| Destroying private property | 14 |
| Destroying public property | 7 |
| Discharging firearms without cause | 9 |
| Disobedience of standing orders or regulations | 121 |
| Disobeying commissioned officer | 126 |
| Disobeying noncommissioned officer | 469 |
| Disobeying sentinel | 37 |
| Disorderly conduct | 69 |
| Disposing of clothing | 22 |
| Disrespect to noncommissioned officer | 111 |
| Disrespect to sentinel | 14 |
| Disrespect to superior officer | 60 |
| Drunk and disorderly | 418 |
| Drunkenness | 314 |
| Drunkenness, etc., causing arrest by civil authorities | 9 |
| Drunkenness, incapacitating for duty | 35 |
| Drunk on duty | 44 |
| Embezzlement | 14 |
| Escaping from guard or sentinel | 11 |
| Escaping from guardhouse | 6 |
| Evasion of duty | 4 |
| Failure to pay debts | 11 |
| Failure to send correspondence through official channels | 4 |
| Furnishing liquor to prisoners | 2 |
| False accusation | 4 |
| False statement or report | 114 |
| False swearing | 5 |
| Fighting | 10 |

Sixty-second Article of War—Continued.

| | |
|---|---|
| Firing firearms, endangering life | 1 |
| Firing on civilians without cause | 1 |
| Forcing entrance into private dwelling | 17 |
| Forgery | 15 |
| Fraud | 11 |
| Fraudulent enlistment | 137 |
| Gambling | 3 |
| Harrassing, annoying and looting natives and citizens | 19 |
| Having possession of intoxicating liquor | 6 |
| Impersonating an officer, sentinel or patrol | 10 |
| Indecent exposure of person | 5 |
| Insubordinate conduct toward commissioned officer | 47 |
| Insubordinate conduct toward noncommissioned officer | 71 |
| Interfering with noncommissioned officer in discharge of his duty | 7 |
| Introducing liquor into camp, quarters, etc | 37 |
| Larceny | 259 |
| Leaving post | 18 |
| Leaving post and abandoning rifle | 4 |
| Making indecent proposals | 19 |
| Manslaughter | 2 |
| Malingering | 14 |
| Misuse of hospital supplies | 5 |
| Mutinous conduct | 26 |
| Neglect of duty | 154 |
| Obtaining money or property under false pretences | 6 |
| Out of quarters after taps | 9 |
| Perjury | 5 |
| Permitting prisoner to obtain intoxicating liquor | 21 |
| Receiving and disposing of stolen property | 6 |
| Refusing to march | 1 |
| Refusing to perform duty | 2 |
| Removing cartridge belt without authority | 2 |
| Resisting arrest | 111 |
| Resisting arrest by civil authority | 6 |
| Resisting being disarmed | 3 |
| Resisting noncommissioned officer | 6 |
| Resisting sentinel | 7 |
| Robbery | 9 |
| Selling, losing or wasting Government property | 23 |
| Sitting down on post | 5 |
| Sleeping while on duty | 15 |
| Striking civilian | 1 |
| Striking noncommissioned officer | 32 |
| Striking sentinel | 2 |
| Threatening noncommissioned officer | 87 |
| Threatening sentinel | 6 |
| Threatening soldier | 35 |
| Threatening superior officer | 12 |
| Unauthorized carrying of arms | 17 |
| Using insubordinate language | 5 |
| Using insulting and abusive language | 43 |
| Using profane and indecent language | 83 |
| Using threatening and abusive language | 92 |
| Uttering forged paper | 3 |
| Disorder, etc., charged as "conduct to the prejudice of good order and military discipline" (not included under previous heads) | 231 |

The following table shows, approximately, the number of convictions in the Volunteer Army of different offences by general courts-martial for the year ending June 30, 1900:

Seventeenth Article of War:

| | |
|---|---|
| Losing accoutrements | 4 |
| Losing arms | 3 |
| Losing clothing | 2 |
| Selling clothing | 12 |

| | |
|---|---|
| Twentieth Article of War: | |
| Disrespect to Commanding Officer | 43 |
| Twenty-first Article of War: | |
| Assaulting superior officer | 9 |
| Disobeying superior officer | 117 |
| Threatening language to superior officer | 2 |
| Twenty-fourth Article of War: | |
| Disobeying commissioned officer quelling a fray | 2 |
| Disobeying noncommissioned officer quelling a fray | 2 |
| Resisting noncommissioned officer quelling a fray | 3 |
| Thirty-second Article of War: | |
| Absence without leave | 111 |
| Thirty-third Article of War: | |
| Failure to attend drill, roll call, etc | 41 |
| Thirty-eighth Article of War: | |
| Drunkenness on duty | 149 |
| Thirty-ninth Article of War: | |
| Quitting post | 20 |
| Sleeping on post | 106 |
| Fortieth Article of War: | |
| Quitting company | 9 |
| Quitting guard | 32 |
| Forty-second Article of War: | |
| Cowardice | 2 |
| Throwing away ammunition in face of enemy | 1 |
| Forty-seventh Article of War: | |
| Desertion | 20 |
| Fifty-first Article of War: | |
| Advising another soldier to desert | 1 |
| Fifty-fifth Article of War: | |
| Committing spoil | 1 |
| Fifty-eighth Article of War: | |
| Assault with intent to kill | 5 |
| Assault with intent to commit rape | 1 |
| Burglary | 1 |
| Larceny | 19 |
| Manslaughter | 1 |
| Mayhem | 2 |
| Rape | 1 |
| Robbery | 11 |
| Sixtieth Article of War: | |
| Embezzlement | 1 |
| Larceny | 11 |
| Purchasing Government property | 2 |
| Selling Government property | 4 |
| Sixty-first Article of War: | |
| Conduct unbecoming an officer and a gentleman | 14 |
| Sixty-second Article of War: | |
| Absence without leave, not chargeable under the thirty-second article of war | 16 |
| Abuse of authority | 4 |
| Aiding and abetting larceny | 5 |
| Aiding prisoner to escape | 2 |
| Allowing prisoner to escape | 9 |
| Assault | 41 |
| Assault and battery | 10 |
| Assault upon noncommissioned officer | 9 |
| Assault upon noncommissioned officer in performance of duty | 17 |
| Assault upon sentry | 6 |
| Assault with dangerous or deadly weapon | 12 |
| Assault with intent to kill | 18 |
| Assault with intent to do bodily harm | 10 |
| Attempt to disarm sentinel | 2 |
| Attempt to escape from guardhouse | 1 |
| Begging | 2 |
| Breach of arrest | 32 |

Sixty-second Article of War—Continued.

| | |
|---|---|
| Careless handling of loaded firearms | 10 |
| Carrying concealed weapons | 2 |
| Committing a nuisance | 1 |
| Conspiracy | 1 |
| Contempt of court | 1 |
| Creating a disturbance | 9 |
| Destroying muster roll | 1 |
| Destroying order | 1 |
| Destroying private property | 2 |
| Destroying public property | 5 |
| Discharging firearms without cause | 10 |
| Disobedience of standing orders or regulations | 29 |
| Disobeying commissioned officer | 27 |
| Disobeying noncommissioned officer | 99 |
| Disobeying sentinel | 9 |
| Disorderly conduct | 13 |
| Disposing of clothing | 2 |
| Disrespect to noncommissioned officer | 15 |
| Disrespect to sentinel | 3 |
| Disrespect to superior officer | 25 |
| Drawing weapon on noncommissioned officer | 1 |
| Drunk and disorderly | 133 |
| Drunk on duty | 9 |
| Drunkenness | 48 |
| Drunkenness, incapacitating for duty | 2 |
| Embezzlement | 4 |
| Escaping from guardhouse | 2 |
| Failure to pay debts | 2 |
| False accusation | 1 |
| False statement or report | 22 |
| Fighting | 3 |
| Forcing entrance into private dwelling | 10 |
| Forgery | 1 |
| Fraud | 1 |
| Fraudulent enlistment | 6 |
| Gambling | 1 |
| Harassing, annoying and looting natives (P. I.) | 5 |
| Indecent exposure of person | 4 |
| Insubordinate conduct toward commissioned officer | 10 |
| Insubordinate conduct toward noncommissioned officer | 21 |
| Introducing liquor into camp, quarters, etc. | 6 |
| Larceny | 65 |
| Leaving ranks without permission | 2 |
| Lying down on post | 1 |
| Making indecent proposals | 1 |
| Malingering | 3 |
| Manslaughter | 5 |
| Neglect of duty | 41 |
| Obtaining money or property under false pretenses | 9 |
| Out of quarters after taps | 2 |
| Permitting member of guard or prisoner to obtain intoxicating liquor | 6 |
| Receiving and disposing of stolen property | 3 |
| Resisting arrest | 19 |
| Resisting being disarmed | 1 |
| Resisting sentinel | 5 |
| Robbery | 7 |
| Selling company property | 1 |
| Selling, losing or wasting Government property | 2 |
| Shooting comrade | 1 |
| Sitting down on post | 1 |
| Sleeping while on duty | 3 |
| Striking noncommissioned officer | 5 |
| Threatening noncommissioned officer | 20 |
| Threatening sentinel | 4 |
| Threatening soldier | 3 |

| | |
|---|---|
| Sixty-second Article of War—Continued. | |
| Threatening superior officer | 15 |
| Using profane and indecent language | 29 |
| Using threatening and abusive language | 32 |
| Disorder, etc., charged as "conduct to the prejudice of good order and military discipline" (not included under previous heads) | 47 |
| Sixty-fifth Article of War: | |
| Breach of arrest by officer | 1 |

The number of men sentenced to dishonorable discharge in the Regular Army was 2,270 and in the Volunteer Army 315. Total 2,585.

Death sentences were imposed by sentence of court-martial in six cases of enlisted men—one of these cases being murder; one, rape; three, rape and other offences; and one striking superior officer. The death sentences were commuted by the President to dishonorable discharge, forfeiture of all pay and allowances, and imprisonment at hard labor for twenty years in five cases, and for three years in one case (striking superior officer.) The death sentence was also imposed by sentence of a court-martial in one case of a civilian employee, for rape and other offences. This sentence was commuted to confinement at hard labor in a penitentiary for twenty years.

The records of military commissions received at this office during the year covered by this report show that 58 persons were tried, of which number 42 were convicted, 15 were acquitted, and the sentence in one case was disapproved. The convictions were of the following offences:

| | |
|---|---|
| Abduction | 1 |
| Assault and battery | 4 |
| Assault and battery and robbery | 2 |
| Assault with intent to kill | 5 |
| Assault with a deadly weapon | 2 |
| Assault with intent to do bodily harm | 1 |
| Burglary | 1 |
| Conspiring and combining with guerillas | 1 |
| Cruelty to prisoners | 1 |
| Highway robbery | 2 |
| Highway robbery and guerilla warfare | 3 |
| Illegal warfare | 1 |
| Kidnapping and maltreating a fellow prisoner | 2 |
| Manslaughter | 1 |
| Misconduct in office as President of a pueblo | 1 |
| Murder | 22 |
| Persuading and advising enlisted men in U. S. Army to desert | 6 |
| Recruiting for insurgent forces | 1 |
| Robbery | 6 |
| Spy | 1 |
| Violating parole | 3 |

Death sentences were imposed by sentence of military commissions in thirteen cases of natives of the Philippine Islands—eight of these cases being for murder and robbery, four for murder, and one for being a spy. The death sentence was disapproved in one case, executed in five cases, and commuted to confinement at hard labor for twenty years in five cases, for fifteen years in one case, and for ten years in one case.

During the last session of Congress I submitted the draft of a bill "To prevent the failure of military justice," which was approved by the Secretary of War and referred to Congress. Towards the end of the session a bill, embodying certain amendments made in committee, was reported to the House of Representatives (H. R. 7571, Fifty-sixth Congress, first session, reported with amendments May 30, 1900), but it was too late for it to receive consideration. The legislation asked for is of importance, and I therefore invite attention to the subject again. As reported to the house, the bill is as follows:

A BILL To prevent the failure of military justice, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That every person not belonging to the Army of the United States who, being duly subpœnaed to appear as a witness before a general court-martial of the Army, willfully neglects or refuses to appear, or refuses to qualify as a witness or to testify or produce documentary evidence which such person may have been legally subpœnaed to produce, shall be deemed guilty of a misdemeanor, for which such person shall be punished on information in the district court of the United States; and it shall be the duty of the United States district attorney, on the certification of the facts to him by the general court-martial, to file an information against and prosecute the person so offending, and the punishment of such person, on conviction, shall be a fine of not more than five hundred dollars or imprisonment not to exceed six months, or both, at the discretion of the court: *Provided*, That this shall not apply to persons residing beyond the State, Territory, or District in which such general court-martial is held, and that the fees of such witness, at the rate of five cents a mile from his place of residence to the place of trial and one dollar and fifty cents for each day required for such travel, shall be tendered him, and that after testifying he shall be paid at the same rate for returning and one dollar and fifty cents per day while in attendance on the court-martial, such amounts to be paid by the Pay Department of the Army out of the appropriation for compensation of witnesses: *Provided*, That no witness shall be compelled to incriminate himself or to answer any questions which may tend to incriminate or degrade him.

SEC. 2. That article ninety-four, section thirteen hundred and forty-two, of the Revised Statutes of the United States be, and the same is hereby, repealed.

SEC. 3. That section one hundred and eighty-three of the Revised Statutes of the United States be, and the same is hereby, amended so as to read as follows:

"SEC. 183. Any officer or clerk of any of the departments lawfully detailed to investigate frauds on, or attempts to defraud, the Government, or any irregularity or misconduct of any officer or agent of the United States, and any officer of the Army detailed to conduct an investigation, and the recorder, and, if there be none, the presiding officer of any military board appointed for such purpose, shall have authority to administer an oath to any witness attending to testify or depose in the course of such investigation."

SEC. 4. That article eighty-three, section thirteen hundred and forty-two, of the Revised Statutes of the United States be, and the same is hereby, amended to read as follows:

"ARTICLE 83. Regimental and garrison courts-martial and summary courts detailed under existing laws to try enlisted men shall not have power to try capital cases or commissioned officers, but shall have power to award punishment not to exceed confinement at hard labor for three months or forfeiture of three months' pay, or both, and in addition thereto, in the case of noncommissioned officers reduction to the ranks and in the case of first-class privates reduction to second-class privates: *Provided*, That a summary court shall not adjudge confinement and forfeiture in excess of a period of one month, unless the accused shall before trial consent in writing to trial by said court, but in any case of refusal to so consent, the trial may be had either by general, regimental, or garrison court-martial, or by said summary court, but in case of trial by said summary court without consent as aforesaid, the court shall not adjudge confinement or forfeiture of pay for more than one month."

SEC. 5. That article sixty, section thirteen hundred and forty-two, of the Revised Statutes of the United States be, and the same is hereby, amended by inserting after the words "shall, on conviction thereof, be punished by fine or imprisonment, or by such other punishment as a court-martial may adjudge," the words "or by any or all of said penalties."

The Judge-Advocate General's Department is now composed of eight officers only, a force entirely insufficient to meet present requirements. Under the law (Act of July 5, 1884) reorganizing the department, the Secretary of War is authorized to supplement this regular force with acting judge-advocates of departments, detailed from officers of the line. This arrangement has proved to be a very good one, and the officers so detailed have done their work well, but I am decidedly of opinion that a larger proportion of officers employed on this work should belong to the regular Judge-Advocate-General's Department. If the present corps were doubled, it would still be necessary to resort to the detail of line officers. This practice should by no means be abandoned, but I think that the number of the detailed officers should not so greatly exceed the number of officers of the department as the demands of the service now render necessary.

Very respectfully,
G. N. LIEBER,
*Judge-Advocate General.*

## EXTRACT FROM THE REPORT OF MAJOR EDGAR S. DUDLEY, JUDGE-ADVOCATE, UNITED STATES VOLUNTEERS, JUDGE-ADVOCATE DIVISION OF CUBA, HAVANA, CUBA, DATED JULY 7, 1900.

### JURISDICTION OF GENERAL COURTS IN CAPITAL CASES.

[Fifty-eighth Article of War.]

The provisions of the Fifty-eighth Article of War, that in time of war, insurrection or rebellion (thereby excluding such trial in time of peace), larceny, robbery, manslaughter, murder, and the other crimes specified in said Article, may be tried by General Courts-Martial, and the punishment on conviction thereof shall not be less than that provided by the laws of the State, Territory or District in which such offence may have been committed, whilst applicable to ordinary conditions and to troops serving in the United States, does not work well in those countries which we are occupying whose laws and penalties are different from our own. These provisions of law when made were undoubtedly intended to refer to the United States or to places where its system of laws extend, and the statutes and laws referred to in this, and in the Ninety-seventh Article of War, were those of the United States, or of a State, Territory or District of the United States—and not those of foreign countries. The jurisdiction of General Courts-Martial should be made to extend over all these crimes at all times and at all places, when committed by persons in the Military service of the United States, or by those attached to or connected with it in time of war, or in countries or territory outside of the United States. This is particularly necessary whenever any of its military forces are serving beyond the limits of the United States, either in territories whose existing laws differ from the American system, or in a foreign country held under military occupation (to that part of the army occupying it) notwithstanding the laws of the country may be in force by order of the military commander.

As the construction of this Article now stands a soldier accused of murder here in Cuba cannot be tried by a General Court-Martial nor a Military Commission. Provisional Courts are only to be established when the ordinary courts fail; he must, therefore, be tried by the civil courts or go free of trial for that crime; but the courts of Cuba, for example, and the punishments for crimes, are not those of the United States.

The question of jurisdiction of a General Court-Martial in the case of a soldier accused of murder having arisen it was decided that such court did not have jurisdiction in the condition of peace existing here and the Military Governor directed his trial by the Civil Courts. The Commanding Officer of the soldier protested against this on the ground, "That he is a citizen as well as a soldier and is within the protection of the guaranties of the Constitution of the United States," and especially of the Fifth and Sixth Amendments. "That this soldier did not place himself beyond the Districts and States named in the Sixth Amendment voluntarily, but in obedience to the order of the Executive Department of the United States, and was at the date of the events to which the accusation relates, and is at the present time, a resident of Cuba only in his character of a soldier and obeying such orders. That as a part of the Army of Occupation he is in person surrounded by the atmosphere of the Constitution and entitled to trial as therein guaranteed. That in fact the Army partakes of the character of Ex-territoriality as to the Island of Cuba. That following well established precedents in similar cases during the Military occupation of foreign or domestic territory by armies of the United States he seems to be entitled to be tried under the Fifth Amendment by a Court-Martial or Military Commission, but not by any Criminal Court of the Island of Cuba."

This protest was carefully examined in this office and an extended opinion given thereon, quoting authorities, in which it was held that, the question of jurisdiction of Courts-Martial was determined by the laws of the United States, not by those of Cuba; that in the condition of peace existing here the Court-Martial did not have jurisdiction over capital cases; that the words of the Fifth Amendment of the Constitution specifically except "cases arising in the land and naval forces" and it has been held by the Supreme Court of the United States (158 U. S., 109) that the words of the Fifth Amendment "when in actual service in time of war or public danger" apply to the Militia only and not to the land and naval forces of the United States; that the Civil Court existing by the authority of the Military Government had jurisdiction. This opinion was appealed from, and as suggested in that opinion, inasmuch as it would establish a precedent for like cases here, it was referred to the Attorney-

General of the United States, and the above opinion of this office, both as to non jurisdiction of Courts-Martial and as to the jurisdiction of the Civil Court, was sustained by him. The Attorney-General held: "1. In the present situation of affairs with regard to Cuba, neither a Court-Martial nor a Military Commission should try Private York. 2. Article 59, of the Articles of War, does not require him to be delivered to the Cuban Courts, but it is nevertheless proper to permit such courts to try him." Meanwhile the soldier has been acquitted by such court.

* * * * * * *

It is believed that the jurisdiction of General Courts-Martial ought to be made to extend to all cases of every character, whether capital offences or not (to them as well as to all others), whenever the Army is outside of the United States proper and expecially whenever the Army is in Military occupation of a foreign country, even though the courts of that country may be in performance of their functions under authority of the Military Commander, for, as in the case with Cuba, that Commander cannot at once change the laws and penalties to conform to American usage, notwithstanding the fact that the methods of procedure are different, no jury system exists, the language is unknown, the accused soldier is always at a disadvantage, and the penalties of the laws if applied, may be severe and unusual, differing from those of his own country.

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## EXTRACT FROM REPORT OF CAPT. L. B. SIMONDS, ACTING JUDGE ADVOCATE, DEPARTMENT OF HAVANA, HAVANA, CUBA, DATED MAY 1, 1900.

In connection therewith, it is desired to earnestly recommend that such legislation be had as will extend the provisions of the fifty-eighth Article of War to our forces serving outside the jurisdiction of the Courts of the United States, wherever it may be, in time of peace, as well as in war, rebellion or insurrection. Two incidents have recently arisen in this Department, where owing to the failure of the Articles of War to provide for the trial and punishment, in time of peace, of soldiers charged with murder, the alleged offenders were turned over to the civil courts, the Judges and officials of which are natives of the Island, speaking a language, employing a procedure and having ideas of justice vastly different from our own. Is it justice that these men should be placed in jeopardy of life and liberty before a tribunal of this nature? These men are none the less citizens of the United States because of their service in the Army. But because of their Army service, they are required to be in a foreign country, should not the Government which sent them there protect them by its own laws? These conditions can be remedied by the amendment of the fifty-eighth Article of War, and such legislation is earnestly recommended.

# REPORT OF THE QUARTERMASTER-GENERAL.

# REPORT

OF

# THE QUARTERMASTER-GENERAL.

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QUARTERMASTER-GENERAL'S OFFICE,
*Washington, D. C., October 16, 1900.*

SIR: I have the honor to submit the annual report of the operations of the Quartermaster's Department for the fiscal year ended June 30, 1900:

### FINANCIAL STATEMENT.

| | | |
|---|---|---|
| By act of Congress approved March 3, 1899, there was appropriated for the regular service of the Quartermaster's Department for the fiscal year ended June 30, 1900, the sum of | | $37,989,990.00 |
| During the fiscal year there was deposited to the credit of appropriations 1899-1900, amounts received from sales to officers, etc | | 1,407,702.83 |
| There was placed to the credit of appropriations by Treasury transfer warrants the sum of | | 25,250,000.00 |
| Making a total of | | 64,647,692.83 |
| Of this there was remitted to disbursing officers | $46,761,555.19 | |
| There was paid out on account of settlements made at Treasury for claims and accounts | 844,520.21 | |
| | | 47,606,075.40 |
| Leaving a balance on July 1, 1900, available for payment of outstanding obligations incurred, or fulfillment of contracts properly entered into within the fiscal year of | | 17,041,617.43 |
| By act of Congress approved May 26, 1900, there was appropriated for military roads and bridges in Alaska the sum of | | 100,000.00 |
| Which sum remained on hand on June 30, 1900. | | |
| On July 1, 1899, there remained on hand from deficiency appropriation January 1, 1899, the sum of | | 28,382,541.32 |
| During the year there was placed to credit of this appropriation from proceeds of sales to officers the sum of | | 1,861,904.59 |
| Making a total of | | 30,244,445.91 |
| Of this there was remitted to disbursing officers | $380,905.19 | |
| There was paid on settlements made at Treasury of claims and accounts | 511,776.79 | |
| There was charged against appropriations by Treasury transfer warrants | 27,040,832.61 | |
| | | 27,933,514.59 |
| Leaving a balance on hand July 1, 1900, of | | 2,310,931.32 |

| | | |
|---|---|---|
| On July 1, 1899, there was on hand from regular appropriation for the service of the Quartermaster's Department pertaining to fiscal year ended June 30, 1899, the sum of | | $19,497,418.67 |
| And from appropriations pertaining to previous fiscal years the sum of | | 252,852.33 |
| And from appropriations for special and indefinite purposes, certified claims, etc., the sum of | | 200,147.91 |
| Making a total balance on hand of these appropriations of | | 19,950,418.91 |
| For specific purposes there was appropriated during the fiscal year ended June 30, 1900 | $416,481.23 | |
| During the year there was deposited and transferred to credit of appropriations other than those of 1900 as shown above, including the sum of $531,173.58 for Pacific roads for years 1898, 1899, and 1900, and also the sum of $37,673 for transportation of volunteers, war with Spain, and the sum of $1,051.85 reimbursement for bringing home remains of officers and others | 3,681,991.05 | |
| | | 4,098,472.28 |
| Making a total on hand from these appropriations of | | 24,048,891.19 |
| Of said amount there was remitted to disbursing officers the sum of | $6,028,242.36 | |
| There was paid out on account of Treasury settlements and transfers | 1,228,793.66 | |
| There was carried to surplus fund | 281,510.32 | |
| | | 7,538,546.34 |
| Leaving a balance on hand July 1, 1900, of | | 16,510,344.85 |

The total balances on July 1, 1900, from all appropriations pertainto the Quartermaster's Department are as follows:

| | |
|---|---|
| From appropriations regular service of the Quartermaster's Department fiscal year ended June 30, 1900 | $17,041,617.43 |
| From appropriation military roads and bridges, Alaska | 100,000.00 |
| From deficiency appropriation January 1, 1899 | 2,310,931.32 |
| From appropriations previous fiscal years and from indefinite and special appropriations | 16,510,344.85 |
| Grand total | 35,962,893.60 |

Of the $200,000 appropriated by act of December 18, 1897, for "Relief of people in mining regions of Alaska" there has been charged against the same on the books of this office during the fiscal year 1900 the sum of $2,758.05.

Of the $50,000,000 appropriated by act of March 9, 1898, for "National defense" there has been charged against the same on the books of this office during the past fiscal year the sum of $868.

Of the $3,630.15 appropriated by act of March 3, 1899, for claims for quartermaster stores and commissary supplies act of July 4, 1864, there has been charged against the same on the books of this office during the fiscal year 1900 the sum of $736.60.

## DUTIES OF THE QUARTERMASTER'S DEPARTMENT.

Under existing laws the Quartermaster's Department, under the direction of the Secretary of War, provides the Army with military stores and supplies requisite for its use, such as clothing and equipage, tents, band instruments, tableware and mess furniture, equipments for post bakeries, fuel, forage, stationery, lumber, straw for bedding for men and animals, all materials for camp and for shelter for troops and stores, furniture for barracks, such as bunks, benches, chairs, tables, lockers, heating and cooking stoves for use in public barracks and quarters, tools for mechanics and laborers in the Quartermaster's Department, furniture, text-books, papers, and equipment for post schools, reading matter for post libraries, wagons, ambulances, carts, saddles, harness, water supply, sewerage, plumbing, illuminating supplies, and heating for all military posts and buildings.

The Department is also charged with the duty of providing transportation, by land and water, for troops, munitions of war, equipments, and all articles of military supplies from the place of purchase to the several armies, garrisons, posts, and recruiting places.

Under act of Congress amending section 1661, Revised Statutes, for arming and equipping the militia, this Department supplies quartermaster stores, clothing, and equipage to the militia of the several States and Territories and transports the same to said States and Territories. It also furnishes transportation for ordnance and ordnance stores issued by the United States to the militia of the several States and Territories. It also transports the property for other Executive Departments on requisitions, payments therefor being made by the respective Departments to the carriers upon accounts forwarded through the Quartermaster-General's Office for that purpose.

This Department prepares the necessary plans and constructs all buildings at military posts, such as barracks, quarters, storehouses, hospitals, etc.; builds wharfs; constructs and repairs roads for military purposes; builds all necessary military bridges; provides, by hire or purchase, grounds for military encampments and buildings; contracts for all horses for cavalry, artillery, and for the Indian scouts, and for such infantry and members of the Hospital Corps in the field campaigns as may be required to be mounted; pays for all incidental expenses of the military service which are not provided by other corps.

The care and maintenance of national cemeteries is an additiona duty of this Department. It also provides suitable headstones to mark the graves of all soldiers, sailors, or marines who served during the late war, including those who have been buried in private cemeteries and other burial places.

Section 1139, Revised Statutes, makes it the duty of the Quartermaster-General, under the direction of the Secretary of War, to prescribe and enforce a system of accountability for all quartermaster's supplies furnished the Army, its officers, seamen, and marines.

## CLOTHING AND EQUIPAGE.

The sum of $8,481,151.83 was available during the last fiscal year for providing clothing and equipage supplies for the Army and the militia. Of this amount $5,626,195.33 was remitted to officers of the Department and requisitions for $133,333.85 issued on settlements made at the Treasury on account of claims, leaving a balance on hand June 30, 1900, of $2,721,622.65.

The demand for tentage having lessened, the manufacture of tents for this Department at the mail-bag repair shop of the Post-Office Department, this city, has been discontinued. The Department is now able to manufacture at the Philadelphia depot all the tents required.

Detailed information showing the principal articles of clothing and equipage supplies purchased and manufactured for and issued to the Army during the past fiscal year will be found in the accompanying report of Maj. W. S. Patten, the officer on duty in this office who is in charge of this branch of the work.

The issues to the militia of the several States and Territories during the fiscal year, including the militia of the District of Columbia, amounted to $286,396.60, which sum has been reimbursed to this Department.

Under the act approved February 24, 1897, clothing and equipage supplies were sold to the governors of the several States and Territories to the amount of $4,122.52. These funds, under the law, will be used to replace the articles sold.

The act of Congress making appropriations for the Regular and Volunteer Army, for the fiscal year 1900–1901, authorizes the Secretary of War, upon application of the governor of any State or Territory, "to replace the quartermaster supplies which the volunteers from said State or Territory carried into the service of the United States Army during the recent war with Spain, and which have been retained by the United States, exclusive of such supplies as have been allowed for in the office of the Auditor for the War Department, and such award accepted by a State."

With a view of ascertaining the intent of the above act, this office, on June 18, 1900, obtained the following opinion from the Judge-Advocate-General of the Army on the subject, which was approved by the Secretary of War:

> 1. That the act applies not only to stores brought into the United States service by volunteers from supplies furnished the States or Territories under the annual militia appropriation, but also supplies purchased by the States and Territories for which no claim has been allowed and accepted.
>
> 2. The act authorizes the property to be replaced, article for article, irrespective of its condition at the time it was accepted into the service of the United States.
>
> 3. The act does not require the article to be strictly new, but that issues can be made of tentage which has been used somewhat, but is still in a perfectly serviceable condition.

Claims are being presented under this law and settlements made in accordance with this decision. The value of settlements made to date amounts to $85,966.82.

The sum of $10,494.51 was expended during the last fiscal year for clothing and other quartermaster supplies for the Apache Indian prisoners of war located at Fort Sill, Okla.

All demands made upon this Department during the year for the various articles of clothing and equipage supplies were promptly met. Great care has been exercised to secure supplies conforming to standards and specifications.

In order to afford opportunity to bidders residing in different sections of the country to compete for clothing supplies, proposals for Eastern deliveries are now invited at Philadelphia, Boston, and Chicago, and bids are opened simultaneously at the three places named, and awards are made to the lowest responsible bidders, for delivery at either of the places mentioned.

## KHAKI CLOTHING.

Since my last annual report the quality of the khaki material for field uniforms has been greatly improved. A new standard and specifications conforming thereto have been adopted. It is of domestic production, possesses great strength, is water repellant, and the dye is fast and stands the prescribed tests, such as exposure to sunlight, boiling in solutions of soap and carbonate of soda, and steeping in peroxide of hydrogen ten volumes in strength.

Improvements have also been made in the manufacture of the khaki coats and trousers, and it is believed a high degree of perfection both in fit and workmanship has been reached.

### KHAKI SHIRTS.

The Secretary of War having authorized the supply of khaki colored shirts in lieu of the chambray shirts, a supply of khaki colored shirting material has been contracted for and its manufacture commenced.

### DARK-BLUE FLANNEL CLOTHING.

The attention of the Department having been called to the statement that the dark-blue flannel clothing when worn in campaign offers a very conspicuous mark to the enemy an experiment will be conducted at Fort Myer, Va., to determine the comparative range of visibility between a body of men wearing the dark blue and the khaki colored clothing. Upon the result of these experiments the subject of a change of color in flannel clothing will be given full consideration.

### VARIETY OF CLOTHING SUPPLIES.

The clothing supply of the Army at present involves a wide range in kind and weight of articles to be provided, suitable for the arctic, tropical, and our own climate.

For Alaska there are required, in addition to the heaviest class of Army clothing and fur caps, gauntlets, and blanket-lined canvas overcoats, such articles as German socks to be worn in connection with arctic overshoes, sweaters, Mackinaw overcoats, oilskin coat and trousers, moccasins, and shoe pacs. To cover the expense to the men of this extra issue of these articles, an additional money allowance of $29.31 is allowed troops serving in Alaska.

For Cuba, Porto Rico, and especially the Philippines, khaki garments and the lighest undershirts, drawers, and socks, all of cotton, are demanded.

As it frequently happens that troops are changed from tropical to colder climates, or vice versa, the men have to be reclothed to a great extent in such cases.

### KHAKI COLORED DUCK FOR TENTS.

Experiments have been made with duck for tents, by having a quantity dyed of same shade as the khaki material. A tent made therefrom was erected in January last. After nine months' exposure to snow, rain, and sun, it is found that the tent has retained its color, with no sign of mildew, and is still good, strong, and fit for service. The use of this duck for future manufactures of tents is contemplated.

### IMPROVED HOSPITAL TENTS.

Capt. Edward L. Munson, assistant surgeon, U. S. A., having invented and patented a hospital tent specially adapted for service in tropical countries, this Department, by authority of the Secretary of War, manufactured for trial in active service 100 of these tents, nearly all of which have been distributed. Full reports in relation thereto have not yet been received. Payment of royalty or other remuneration on any tents that have been or may hereafter be constructed for use of the United States Army has been waived by the inventor.

### LAY FIGURES EXHIBITING KHAKI FIELD UNIFORMS.

Orders have been given to construct a group of four lay figures to be placed in one of the War Department corridors for exhibition, so that visitors to the building may see the khaki and field uniforms and equipments of our Army as used in the Philippines.

### CAVALRY AND ARTILLERY HORSES AND MEANS OF TRANSPORTATION.

The following statement shows the number and cost of public animals, wagons, and harness purchased by this Department from July 1, 1899, to June 30, 1900:

| | Number. | Total cost. | Average cost each. |
|---|---|---|---|
| Cavalry horses | 1,590 | $171,044.06 | $107.58 |
| Artillery horses | 106 | 14,950.50 | 141.04 |
| Riding horses, for mounting infantry | 4,650 | 354,645.37 | 76.26 |
| Draft horses | 11 | 1,813.00 | 164.82 |
| Bell horses | 2 | 100.00 | 50.00 |
| Pack mules | 100 | 6,000.00 | 60.00 |
| Army wagons | 100 | 10,600.00 | 106.00 |
| Escort wagons | 600 | 57,590.00 | 95.98 |
| Wagonettes, or other kinds | 17 | 3,994.00 | 234.94 |
| Ambulances: | | | |
| Red Cross | 125 | 19,717.50 | 157.74 |
| 1900 pattern | 1 | 225.00 | 225.00 |
| Trucks, 2 and 4 horse | 7 | 2,550.00 | 364.29 |
| Dump carts | 35 | 2,262.86 | 64.65 |
| Dump carts, sanitary | 15 | 2,593.00 | 172.87 |
| Cart, spring | 1 | 45.00 | 45.00 |
| Express wagon | 1 | 125.00 | 125.00 |
| Water wagons | 8 | 2,054.50 | 256.81 |
| Spring wagons, delivery | 117 | 15,081.00 | 128.89 |
| Miscellaneous wagons | 10 | 1,666.00 | 166.60 |
| Wagon covers | 3,710 | 14,178.06 | 3.82 |
| Sleighs | 29 | 787.50 | 27.16 |
| Single sets harness | 2,437 | 38,903.74 | 15.96 |
| Cart harness | 10 | 200.75 | 20.07 |
| Pack saddles and parts | 240 | 7,509.75 | 31.29 |
| Aparejos and parts | 1,085 | 36,277.06 | 33.43 |
| Total | .......... | 764,913.65 | .......... |

The total cost of army ranges, ovens, field desks, paulins, typewriters, and office safes amounted to $136,015.45.

During the fiscal year 4,468 riding horses, 3,008 draft mules, 500 pack mules, 841 escort wagons, 116 ambulances, 78 spring delivery wagons, 25 light farm wagons, 21 Dougherty wagons, 6 5-ton drays, 4,616 sets wagon harness, 372 sets ambulance harness, and 56 sets of 6-mule wagon harness were shipped to the Philippines for use of the Army.

Approximately, 371,493 tons of coal were purchased during the year for transports. During the fiscal year forage was purchased and shipped to the Philippines, Cuba, and Porto Rico, as follows:

| | Pounds. |
|---|---|
| Oats | 70,960,574 |
| Hay | 93,997,890 |
| Bran | 1,207,640 |
| Barley | 30,000 |
| Straw | 348,743 |
| Carrots | 8,240 |

### SALE OF SURPLUS AND CONDEMNED ANIMALS.

During the past fiscal year there were sold, after advertisement, 80 surplus horses, for which the sum of $6,582.79 was realized, average price per animal, $82.28. There were also condemned and sold during the year 869 cavalry horses for $28,534.63, average price $32.83 each; 162 artillery horses for $5,488.10, average price each $33.88, and 174 draft horses for $8,690.75, average price $49.95 each.

In addition to the foregoing, 1,461 surplus mules were, under authority of the Secretary of War, sold for $137,261.87, an average of $93.95 each, and 470 condemned mules for $16,949.13, an average of $36.06.

When peace was declared with Spain there was a large number of mules on hand in excess of the needs of the service, and for this reason the number above given were sold. These sales were, however, immediately suspended when it became evident that a considerable number of mules would be required for service in the Philippines. The Department was able to supply all mules necessary during the fiscal year for draft purposes from those remaining on hand from the Spanish war.

During the year there were 772 horses and 658 mules lost, died, stolen, etc.

There remained on hand at the close of the fiscal year, according to the latest reports, 16,924 horses and 10,669 mules.

It is remarked that no full reports in relation to animals have been received from the Philippines, and it is believed that, when full reports are made, the numbers above stated as remaining on hand June 30, 1900, will be somewhat modified.

During the year a large number of wagons, ambulances, and harness, which were left on hand from the war with Spain, have been painted and put in serviceable condition for issue where needed.

### TRANSPORTATION.

During the past fiscal year transportation was furnished by rail, water, wagon, and stage, exclusive of the army transport service, for 747,399 persons; 18,455 animals, and 328,801 tons of material.

There was transported over bond-aided railroads 32,327 persons, 5,295 animals, and 85,470,713 pounds of freight.

One thousand two hundred and seventy-nine accounts for telegraphic service, amounting to $322,963.05, were examined in this office and transmitted for settlement during the year.

The cost of maintaining the twenty-six vessels owned by this Department, including the repairs thereto, amounted to $196,662.29. These vessels are exclusive of the army transports owned and chartered by this Department in connection with the army transport service, and comprise those used in harbors and for communication with sea-coast artillery posts in the United States.

### THE ARMY TRANSPORT SERVICE.

On July 1, 1899, there were in the service of this Department 19 transports and 2 hospital ships, which were all owned by the Department. Thirteen of these, with 1 hospital ship, were in service in the Atlantic fleet, and 6 transports and 1 hospital ship in the Pacific fleet. These 21 vessels have a total tonnage of 79,795, and a carrying capacity of 1,057 officers and 18,671 men.

During the past fiscal year there were five vessels purchased or transferred to the Department, as follows:

The steamship *Cassius*, having a tonnage of 3,458, was purchased from the Navy Department for the sum of $160,594, payment being made from the allotment to War Department for appropriation for "National defense." This vessel was renamed *Sumner*, and was fitted up as a troopship by the Navy Department at the Norfolk Navy-Yard, at a total cost of $649,576.89, which sum includes an expenditure of $194,922.43 for auxiliary machinery, fittings, and supplies placed upon the ship.

The *Sumner* sailed from New York for Manila on March 31, 1900, via the Suez Canal, with 46 officers, 649 recruits, and 10 other passengers. She arrived at Manila on May 23, 1900, without casualty. She is now engaged in running between Nagasaki, Japan, and Taku, China, in connection with the requirements of our troops serving in China.

The steamship *Columbia*, having a tonnage of 2,976, was purchased from her owners, the North American Mail Steamship Company, for the sum of $147,200, which was regarded as a very reasonable price. Her name was changed to *Rosecrans*. This ship, having previously been in the service of the Department under charter and being already fitted to carry troops, was sent to Seattle to assist in carrying troops and supplies to Alaska. She has since been transferred to the Pacific fleet of transports and is now in Philippine waters.

The U. S. S. *Badger* and *Resolute*, which had been purchased by the Navy Department for service in the war with Spain from appropriation "National defense," were, by order of the President, transferred to the War Department and were fitted up for the Army transport service.

The *Badger* was renamed *Lawton* and was fitted up for service in connection with the transportation of troops and supplies to Alaska at a cost of $125,000. Her tonnage is 3,497. She is now engaged in that service and is also being utilized to return destitute citizens from Alaska to the United States. She can carry 700 passengers.

The steamship *Resolute* was renamed *Rawlins*. Her tonnage is 2,898. She was fitted up, under contract with the William Cramp & Sons' Ship and Engine Building Company of Philadelphia, at a cost of $100,877. The work on this vessel was completed about the close of the last fiscal year, and she is now in service transporting troops and supplies between New York and the West Indies.

The steamer *Dickinson*, which was renamed *Seward*, was purchased at Seattle from Mr. E. E. Caine for the sum of $145,000. This vessel was in course of construction when purchased, and such changes as were required to fit her for service as a dispatch boat for the Department of Alaska were made while she was being completed. These alterations consisted of additional rooms for accommodations of passengers, providing additional lavatory, heating and lighting facilities, life boats, refrigerating and ice plant, etc., costing in the aggregate $13,879.75. The vessel is of wood, and is very strongly built with a view to moving safely through ice; is 1,200 tons burden, and is thoroughly suited and equipped for a dispatch boat in Alaskan waters.

### REGULAR STEAMSHIP LINES BETWEEN NEW YORK AND THE WEST INDIES.

Two regular lines of transport ships were maintained during the year between the United States and the West Indies. One sailing weekly from New York to San Juan, P. R., thence to Santiago, Cuba, and return to New York; the other sailing about every ten days from New York to Matanzas, Habana, and Cienfuegos, Cuba, thence returning to Habana and New York. For this service seven transports have been employed, viz, the *Buford*, *Burnside*, *Crook*, *Kilpatrick*, *McClellan*, *McPherson*, and *Sedgwick*.

### REFITTING OF ARMY TRANSPORTS.

During the past fiscal year the transports *Crook* and *Sedgwick* have been refitted. The former by John N. Robbins Company, of New York, at a cost of $303,217.47, and the latter by the same company at a cost of $205,768. Both of these are capable of carrying comfortably 50 officers and 1,000 men each.

The refitting of the transports *Thomas*, *Logan*, and *Meade* and the hospital ship *Missouri*, noted in my last annual report as being in progress, was duly completed at a cost of $283,391.43, $304,351.50, and $314,038.62, respectively.

The *Thomas* sailed from New York to Manila, via Suez Canal, November 4, 1899, carrying 1,420 passengers. The *Meade* sailed on November 16, 1899, with 1,169 passengers, and the *Logan* on November 20, 1899, carrying 1,465 passengers. All these transports made successful voyages and arrived in Manila without casualty.

The hospital ship *Missouri* sailed from New York to Manila, Suez Canal route, September 30, 1899, with a full complement of medical officers, nurses, and enlisted men of the Medical Corps, and arrived in Manila on November 28, 1899. The vessel made the voyage from Manila to San Francisco with sick and wounded soldiers on board, arriving at San Francisco February 13, 1900. Upon an inspection of the ship it was found that to make her satisfactory for a hospital ship on the Pacific extensive alterations and repairs at a considerable cost were necessary, and as each of the Army transport ships was provided with hospital accommodations ample for the returning invalid soldiers from the Philippines, it was decided to convert the *Missouri* into a transport ship of the freight class. This was accordingly done, and the ship renamed the *Egbert*. The vessel has been used for the transportation of supplies to Alaska during the past summer, and is now attached to the Pacific transport fleet.

The transport *Hancock* was refitted during the year, in San Francisco, by the Union Iron Works, at a cost of $456,420.52. She is now a modern troopship, and doing excellent service.

Two large transports, the *Buford* and *Kilpatrick*, are now being refitted for service on the Pacific. The Newport News Shipbuilding and Dry Dock Company, of Virginia, is refitting the *Buford* under contract, at a cost of $397,637, and the John N. Robbins Company, of

New York, is refitting the *Kilpatrick* under contract, at a cost of $408,000. Both these transports will be completed about October 31, 1900, and are scheduled to sail from New York to Manila, via Suez Canal route, the early part of November, 1900.

The fitting up of transports is now made in a most thorough and complete manner, the specifications are prepared with great care, and the subject given most attentive study. The valuable experience gained in the work of refitting previously done in other transports enables the Department to now have this work performed at the minimum cost. Every suggestion looking to improvements that would be conducive to the comfort and well being of the troops traveling thereon has been adopted, so that it is believed that the transports of this Department which have been specially fitted up for our transportation service are not excelled by the transports of any other nation of the world. The representatives of England, France, Germany, Japan, and Russia have requested and have been furnished copies of the plans and specifications upon which our transports have been refitted.

The transport *Hooker*, which had been fitted up for a cable ship for the Signal Service, arrived at Manila from New York on June 26, 1899. On August 11, 1899, she was ordered to proceed to Hongkong, China, for coaling, and on leaving Manila ran aground near Corregidor Island. Every effort to save the vessel proved unavailing, and the ship became a total loss. The larger part of the cable was saved. The original cost of this vessel, including its fitting up as a cable ship, was $171,213.

Since the close of the last fiscal year the transport *Burnside* has been taken out of commission in the Atlantic transport fleet and fitted up in New York to transport deep-sea cable to the Philippines for the Signal Corps of the Army. The ship is provided with three tanks, in which are stored about 550 miles of cable, and is also provided with all necessary appliances for laying the cable.

The following is a list of the Army transports owned by this Department and in service on June 30, 1900, showing their tonnage, carrying capacity, and where employed:

| Name. | Tonnage. | Passenger capacity. | | Cargo capacity, tons. | Remarks |
|---|---|---|---|---|---|
| | | Officers. | Men. | | |
| Buford | 3,732 | 61 | 1,000 | 1,000 | Being fitted for Pacific. |
| Burnside | 2,194 | 27 | 273 | .......... | Fitted for Pacific cable ship. |
| Crook | 4,126 | 54 | 1,000 | 1,500 | Atlantic fleet. |
| Egbert | 2,903 | 21 | 650 | 1,500 | Pacific fleet. |
| Grant | 5,658 | 68 | 1,836 | 2,400 | Do. |
| Hancock | 5,000 | 54 | 1,062 | 1,500 | Do. |
| Ingalls | 1,147 | 26 | 260 | 500 | Under orders for San Juan as dispatch boat. |
| Kilpatrick | 3,722 | 61 | 1,000 | 1,000 | Atlantic fleet. |
| Lawton | 3,497 | 60 | 700 | 1,600 | Pacific fleet. |
| Logan | 5,673 | 86 | 1,648 | 2,435 | Do. |
| McClellan | 2,792 | 30 | 200 | 1,800 | Atlantic fleet. |
| McPherson | 3,656 | 66 | 500 | 2,000 | Do. |
| Meade | 5,641 | 60 | 1,171 | 1,430 | Pacific fleet. |
| Rawlins | 2,898 | 59 | 500 | 1,000 | Atlantic fleet. |
| Relief | 3,095 | 20 | 252 | .......... | Hospital ship, Pacific fleet. |
| Rosecrans | 2,976 | 26 | 636 | 1,300 | Pacific fleet. |
| Sedgwick | 4,770 | 59 | 1,000 | 1,025 | Atlantic fleet. |
| Seward | 1,200 | 15 | 200 | 600 | Dispatch boat in Alaska. |
| Sheridan | 5,673 | 93 | 1,843 | 2,400 | Pacific fleet. |
| Sherman | 5,780 | 69 | 1,750 | 2,400 | Do. |
| Sumner | 3,458 | 57 | 780 | 500 | Do. |
| Terry | 1,338 | 81 | 400 | .......... | Out of commission in New York |
| Thomas | 5,796 | 95 | 1,654 | 2,204 | Pacific fleet. |
| Warren | 4,243 | 42 | 1,242 | 2,000 | Do. |
| Wright | 777 | 5 | 80 | 300 | Being repaired for dispatch boat. |
| Total | 91,745 | 1,295 | 21,637 | 32,394 | |

The following is a list of the steam lighters and tugs which were maintained by the Department at the ports in Cuba and Porto Rico during the fiscal year for the distribution of supplies to the garrisons on those islands:

| Name. | Class. | Where employed. |
|---|---|---|
| Ord | Tug | Manzanillo, Cuba. |
| Reno | do | Habana, Cuba. |
| Reynolds | do | Do. |
| Richardson | do | Matanzas, Cuba. |
| Slocum | do | San Juan, P. R. |
| Gibbon | do | Nuevitas, Cuba. |
| Weitzel | do | Santiago, Cuba. |
| Baker | Steam lighter | Habana, Cuba. |
| Poe | do | Do. |
| Williams | do | Manzanillo, Cuba. |
| Kearney | do | Habana, Cuba. |
| Esparanza | Sloop | Gibara, Cuba. |
| Miguel | do | Do. |

Since the close of the fiscal year the steam lighter *Poe* was withdrawn from the service in Cuba and is now on duty as a harbor boat at Fort Barrancas, Fla.; the tugs *Reno* and *Reynolds* are now in New York, their services being no longer required in Cuba, and the tug *Weitzel* is under orders to proceed from Santiago to New York. These three tugs will probably be made available for service in the harbor of New York and dispense with the service of those which are nor hired for the docking and handling of the transport ships.

The tug *Slocum* was withdrawn from the service at San Juan, P. R., and was sent to New York, where she was put in thorough repair and sent to San Francisco for service in handling the army transport ships and lightering passengers and supplies. The tug left New York for San Francisco on July 12, 1900, via the Straits of Magellan, and arrived safely in San Francisco on October 6, 1900.

Three small transport ships were in service in Cuba during the year, viz, the *Ingalls*, at Habana; the *Wright*, at Santiago (as dispatch boats for the commanding generals at those places), and the *Terry* in service of the Medical Department for a short period.

The reduction of the garrisons of the island rendered unnecessary the service of these vessels, and they have been withdrawn from there, the *Terry* and *Wright* being sent to New York and put out of commission, and the *Ingalls* sent to San Juan for service as a dispatch boat for the Department of Porto Rico. It is believed that the *Ingalls* would be a useful vessel for the inter-island service in the Philippines, and the subject of sending her there and sending the *Wright* to San Juan in her place, or sending the *Wright* to the Philippines, is now under consideration.

During the year the War Department purchased from the Navy Department two small steamers, the *Kanawha* and *Viking*, for the customs service in Cuba, the former at a cost of $50,000 and the latter $30,000, payment of which was made by the transfer of the amounts from the appropriation for "National defense."

The vessels were fitted up and sent to Cuba, where, after trial, they were found unsuited for the customs service, and they have been transferred to the army transport service. The *Kanawha* has been assigned to service at Habana as a dispatch boat for the Division of Cuba. The *Viking* is under orders to be sent to the States for use where needed.

The latter part of June, 1900, five of the army transports were specially prepared for and used to transport 1,273 male and female teachers from the several ports in Cuba to Boston, Mass., where they had been invited by the authorities of Harvard University. In August, 1900, these teachers were returned to Cuba by the army transports. No casualty occurred during the voyages to and from this country.

### ARMY TRANSPORT SERVICE ON THE PACIFIC.

On July 1, 1899, preparations were being made for the transportation of an army to the Philippines and the return from there of the volunteer troops whose term of service had expired.

For this service there were on the Pacific five owned transport ships, the *Grant*, *Sherman*, *Sheridan*, *Hancock*, and *Warren*, with a combined carrying capacity of 326 officers and 7,733 enlisted men. The Department at that time had eight vessels under charter, with a carrying capacity of 284 officers and 6,804 men. Twenty additional ships were chartered for the service and fitted up for the accommodation of troops. These last mentioned had a carrying capacity of 371 officers and 14,328 men. Upon the foregoing ships were transported from San Francisco, Seattle, and Portland to the Philippines 42,111 passengers, which included officers, enlisted men, nurses, civilian employees, and others.

During the fiscal year there were transported from the Philippines to the United States 20,654 persons, consisting of officers, enlisted men, and others. These include the return to the United States for muster out of service of the following volunteer troops, viz: Second Oregon, Tenth Pennsylvania, First Nebraska, Utah Artillery, First Colorado, First California, California Artillery, First Wyoming, Wyoming Artillery, First North Dakota, First Idaho, First South Dakota, Thirteenth Minnesota, First Montana, Twentieth Kansas, First Washington, Fifty-first Iowa, First Tennessee, Nevada Cavalry, and Volunteer Signal Corps.

The chartered steamship *Morgan City*, which sailed from San Francisco on August 10, 1899, with 8 officers, 675 recruits, 25 enlisted men, nurses, and postal clerks, on the morning of September 2, 1899, while making passage through the Inland Sea of Japan, in charge of a local pilot, struck a rock, and upon being floated by the rise of the tide, it was found the vessel was leaking badly. She was beached and became a total wreck. The officers and men were all safely landed on the shore of the small island of Innoshima. The officers in command of the troops visited the mainland and communicated by telegraph to the United States minister at Tokyo the conditions existing, who promptly took measures for the relief of the stranded troops. A war ship of the Japanese Government was sent to offer any needed assistance, and through the courtesy of the Japanese Government, abundance of food supplies were purchased and sent to the troops. These stranded troops were subsequently taken to Nagasaki, where they were embarked on the chartered transport *Ohio*, which was dispatched from Manila for the purpose, and arrived at Manila on September 19, 1899.

With this exception no serious accident has occurred on the troop ships.

### TRANSPORTATION OF ANIMALS AND SUPPLIES TO THE PHILIPPINES.

During the fiscal year three large troopships were transferred from the Atlantic to the Pacific fleet, viz, *Thomas*, *Meade*, and *Logan*, which increased the number in the latter fleet to eight. With these transports semimonthly sailing between San Francisco and Manila was arranged, so that a transport would leave each port on the 1st and 16th of each month. In the event of the sailing days occurring on Sunday the ship leaves San Francisco on the preceding day.

In addition to the accommodation for troops and their baggage these ships have a large freight-carrying capacity and are used in transporting a large quantity of quartermaster, subsistence, medical, and other supplies for the army in the Philippines. The increase in the military force serving there greatly augmented the demand for animals for the cavalry and artillery, means of transportation, and the supplies for the army, making additional freight and animal ships necessary.

During the fiscal year fifteen steamships and one sailing vessel have been under charter for the transportation of animals and freight.

For the transportation of animals special care has been exercised in selecting suitable ships. Transports of large carrying capacity are necessary, as an ample supply of forage must go on each ship to sustain the animals en route.

For the safety and comfort of the animals, stalls are constructed on the ships of smoothly planed lumber, and material placed on board for padding the stalls in case the animals become chafed. Extra stalls are provided to enable the animals to be changed from one to another, and space left on the decks, where the animals may be exercised when the sea is smooth. Slings, made of heavy canvas, of sufficient strength to support the weight of the animals, are also provided, if their use should become necessary. Special attention has been given to the subject of ventilation. Electric plants have been installed for lighting the ships and running fans for forcing fresh air between decks occupied by the animals and for exhausting the foul air in them, which are supplemented by wind sails attached to the hatches and ports. Condensing apparatus is placed on the ships to provide an ample supply of fresh water. A hospital is provided on each ship, where the sick animals may be treated. A veterinary surgeon and a corps of experienced care takers for the animals accompany each ship. In a word, everything is provided on these ships that will be conducive to the safety and comfort of the animals during their long voyage.

A corral has been established at Honolulu, where the animals are landed for rest and recuperation before resuming the voyage to Manila. Hilo, another island of the Hawaiian group, was also used for this purpose during the prevalence of the bubonic plague at Honolulu.

Through the courtesy of the Japanese Government, arrangements were made to permit the animals en route to the Philippines going by the northern route to be landed at Kobe for rest and recuperation, and a large number have been landed at that port instead of stopping at Honolulu or Hilo.

There have been shipped from the Pacific coast during the fiscal year 10,315 animals. This service, as a rule, has been most satisfactorily performed, the animals generally arriving at the end of their voyage in good condition and the losses en route not greatly, if at all, exceeding the percentage of loss among similar numbers of animals when transported on land, except in two shiploads, which suffered loss and damage by encountering severe storms, viz: The steamship *Siam*, which sailed from San Francisco on August 19, 1899, with 47 horses and 326 mules on board, ran into a typhoon off the coast of the island of Luzon, and arrived in the harbor of Manila with only 16 mules alive and fit to land; and the steamship *Victoria*, which left Seattle on November 23, 1899, with 404 animals on board, sailed via the northern route, encountered a severe storm, and was compelled to return to Seattle four days later. Eighty-seven of the animals on board were either killed or subsequently died of their injuries, and the remainder were too badly maimed and bruised to permit of their reshipment at that time. The *Victoria* was then sent to San Francisco, from whence she took a load of animals to Manila via Honolulu and the southern route.

For the large number of animals in the Philippines it is necessary to provide many tons of forage. Hay and grain are purchased largely in the markets of the North Pacific coast and shipped thence direct to Manila. It has been ascertained after trial that in case of shortage of American forage the native forage, consisting of rice straw, unhulled rice, and native grass can be fed to the animals during the emergency with fair results. This native forage can, however, be obtained only in a very limited quantity.

During the fiscal year 44 ships were employed under charter by this Department in connection with the transport service. These vessels have been discontinued and charters canceled as rapidly as their services could be spared. At the close of the fiscal year 11 chartered vessels remained in service.

### ARMY TRANSPORT SERVICE IN THE PHILIPPINES.

Upon the military occupation of Manila, in 1898, the supply of the army serving there was confined to the delivery of military supplies in the harbor of Manila by the transport ships. These supplies had to be lightered from the ships to the quartermaster's depot, at a distance of 2 or more miles, and for this purpose the native cascoes and lorches had to be depended upon. These proved to be entirely inadequate for the service.

The chief quartermaster was accordingly authorized to purchase the necessary steam lighters, tugs, and launches to meet the lighterage requirements in Manila Harbor, so that this work could be accomplished expeditiously.

The distribution of the army serving in the Philippines to the various important islands of the archipelago rendered necessary the detail of ships for the transportation of troops and supplies from Manila to those islands. For this purpose the chartered steamships *Pennsylvania* and *Indiana* were ordered, on their arrival in Manila from San Francisco in February and March, 1900, to remain in Philippine waters under the orders of the chief quartermaster at Manila for local service around the islands. These ships had previously been fitted for carrying troops and were well equipped for the purpose, and in addition could carry large quantities of stores.

It is designed to replace these ships by two other ships which are owned by the Department as soon as they can be fitted up and made suitable for the service.

The coaling of army transport ships in the harbor of Manila has been a perplexing question, the lightering of coal to the ships out in the harbor and the transfer from the lighters to the ship bunkers by hand being a slow and costly process.

A vessel was purchased in Manila and anchored in the bay for use as a collier, upon which hoisting apparatus, with a capacity for delivering to the transport ships 600 tons of coal per day, was installed.

Additional colliers being needed, efforts were made to secure suit able vessels in China and Japan without avail, and the sailing ship *St. Mark*, with a capacity for 2,700 tons of coal, was purchased during the fiscal year in New York and fitted up and sailed from Norfolk, Va., for Manila, via Cape Horn, with a load of coal on board, on July 11, 1900. The price paid for this ship was $50,000.

Another sailing ship, the *Cyrus Wakefield*, has been purchased in San Francisco since the close of the fiscal year, at a cost of $45,000, and dispatched to Nanaimo for a load of coal, whence she will sail for Manila.

These ships, on arrival in Manila, will be provided with hoisting apparatus and anchored in the harbor for coaling purposes. They will be known as colliers Nos. 1, 2, and 3.

At certain seasons typhoons are of frequent occurrence in Manila Harbor, during which it has been impossible to deliver coal to the ships. With these colliers it will be practicable to coal the ships during a storm, the collier being towed under the lee of a point at Cavite, protected from the violence of the storm, where coal may be transferred to the ships with safety.

### TRANSPORTATION SERVICE BETWEEN THE STATES AND CUBA, PORTO RICO, HONOLULU, AND THE PHILIPPINES.

There were transported on army transports during the fiscal year:

| | Passengers. | Animals. | Freight. *Tons.* | Packages. |
|---|---|---|---|---|
| From United States to Cuba | 4,362 | 23 | 56,128 | 871,936 |
| From Cuba to the United States | 8,233 | 1,881 | 3,943 | 44,192 |
| From United States to Porto Rico | 1,730 | 6 | 35,854 | 505,111 |
| From Porto Rico to United States | 2,077 | 498 | 706 | 8,785 |
| From United States to Honolulu | 148 | | 2,930 | |
| From Honolulu to United States | 55 | | 20 | |
| From Honolulu to Manila | 228 | | 1,190 | |
| From United States to Philippines | 46,870 | 10,315 | 191,090 | 1,093,812 |
| From Philippines to United States | 20,654 | | | |
| From United States to Alaska, including lumber | 882 | 86 | 9,672 | |
| From Manila to China | 1,345 | | | |
| From Manila to other points in Philippines | 17,838 | 588 | 8,150 | |
| Total | 104,422 | 13,397 | 310,683 | 2,523,836 |

From May 25, 1898, to June 30, 1900, a total of 333,932 passengers have been transported in going to and from Cuba, Porto Rico, Honolulu, Philippines, and the United States, and going from Philippines to China. Since the close of the fiscal year 27,683 passengers (approximately) have been transported, which includes the troops going from the United States to China and the Philippines.

### REPATRIATION OF SPANISH PRISONERS IN THE PHILIPPINES.

The transportation of the Spanish prisoners from the Philippine Islands to Spain under the terms of the treaty of peace with the Spanish nation has continued under the contract with Messrs. J. M. Caballos & Co., as the prisoners have been released from the hands of the Filipinos and brought to Manila, from whence they are shipped to Spain.

The bills presented for the services rendered under the contract show that there have been transported from the Philippine Islands to Spain 1,589 officers, 13,477 enlisted men, and 2,308 other persons, a total of 17,374 prisoners. Settlement of these bills has been made in part by the payment of the sum of $1,304,647.50.

### EXPENDITURES, ARMY TRANSPORT SERVICE.

The reports of expenditures at the principal ports of operations show that during the year there has been expended—

| | |
|---|---|
| For purchase of vessels of all classes | $559,150.00 |
| For charter of ships | 6,974,004.65 |
| For fitting up and repair of transport ships | 5,800,312.18 |
| Total | 13,333,466.83 |

It is gratifying to report that the work pertaining to the transport service performed during the year has been accomplished without the sacrifice of a single human life by reason of any defect in the condition of the transport service.

### REGULATIONS.

The regulations of the army transport service were revised and approved by the Secretary of War on May 5, 1900.

On November 20, 1899, Maj. Charles Bird, quartermaster, U. S. A., in charge of the division of transportation, this office, in accordance with the instructions of the Secretary of War, visited the Philippines and other places, with a view to inspecting the condition of the transport service at the various places, and obtaining other important information for the use of the Department. He returned here on March 30, 1900, and submitted a full report containing much valuable data, which has been very helpful in the transaction of the public business of this Department.

Maj. J. B. Bellinger, quartermaster, U. S. V. (captain and assistant quartermaster, U. S. A.), performed Major Bird's duties in this office, during the latter's absence, in a most efficient and satisfactory manner.

### GENERAL SUPERINTENDENTS, ARMY TRANSPORT SERVICE.

There are two general superintendents of the army transport service, with established offices at San Francisco, Cal., for the Pacific, and New York for the Atlantic. During the past fiscal year Maj. O. F. Long, quartermaster, U. S. V. was in charge of the former, and Maj. F. B. Jones, quartermaster, U. S. A., was in charge of the latter until May 10, 1900, when, by reason of his sickness, Col. A. S. Kimball, assistant quartermaster-general, U. S. A., in addition to his other duties, acted as general superintendent, and so continued until August 25, 1900, when Maj. Carroll A. Devol, quartermaster, U. S. V., was assigned to duty as general superintendent at New York City.

The general superintendents direct the affairs of the army transports leaving and arriving at their respective ports, supervising their loading, unloading, repair, etc. The work intrusted to their care is exceedingly important, and was efficiently performed.

### BARRACKS AND QUARTERS.

Under the acts of Congress approved March 3, 1899, and February 9, 1900, the sum of $4,000,000 was appropriated for barracks and quarters.

The law authorized an expenditure of $130,000 from the above sum, or so much thereof as might be necessary, for the purchase of a site or sites for the location of barracks for the accommodation of a garrison in charge of fortifications, if in the judgment of the Secretary of War the emergency exists.

The sum of $3,266,912.34 was expended during the fiscal year, so far as reported, for construction and repair of buildings, for temporary buildings, tent floors, etc., at camps in the United States; for material and labor to construct shelter for troops in Alaska, Cuba, Porto Rico, Philippines, and for rent, which amount included the sum of $126,000 for the purchase of land near Galveston, Tex., for site of new post (Fort Crockett).

### MILITARY POSTS.

The sum of $670,000 was appropriated by act approved March 3, 1899, "for the construction of buildings at and the enlargement of such military posts as in the judgment of the Secretary of War may be necessary, and for the erection of barracks and quarters for the artillery in connection with the adopted project for seacoast defense."

The law provided that from this sum $100,000 may be used for the purchase of suitable building sites, and also that the sum of $50,000 shall be used for the erection of barracks and quarters, gun sheds, and stables for one battery of light artillery at Fort Leavenworth, Kans.

The $670,000 above mentioned was apportioned as follows:

| | |
|---|---|
| Fort Adams, R. I | $70,568.00 |
| Fort Banks, Mass | 21,143.00 |
| Fort Caswell, N. C | 30,601.50 |
| Fort Casey, Wash | 6,520.10 |
| Fort Columbia, Oreg | 947.40 |
| Fort Dade, Fla | 9,040.00 |
| Fort Du Pont, Del | 46,202.00 |
| Fort Flagler, Wash | 23,162.70 |
| Fort Fremont, S. C | 23,353.54 |
| Fort Greble, R. I | 23,623.00 |
| Fort Howard, Md | 45,400.00 |
| Fort Leavenworth, Kans | 49,570.27 |
| Fort Pickens, Fla | 2,510.39 |
| Fort Preble, Me | 37,009.75 |
| Fort Rodman, Mass | 3,399.59 |
| Fort St. Philip, La | 19,265.25 |
| Fort Schuyler, N. Y | 18,124.00 |
| Fort Strong, Mass. (purchase of land) | 18,714.18 |
| Fort Totten, N. Y | 31,136.00 |
| Washington Barracks, D. C | 7,884.00 |
| Fort Washington, Md | 46,202.77 |
| Fort Williams, Me | 80,016.63 |
| Miscellaneous | 53,994.01 |
| Printing and advertising | 1,611.92 |
| Total | 670,000.00 |

The sum of $275,000 was appropriated by act approved March 3, 1899, for the construction and repair of hospitals at military posts already established and occupied, including expenditure for construction and repairs required at Army and Navy Hospital at Hot Springs, Ark., except quarters for officers. Of this sum $250,000 was apportioned for hospitals at various military posts in the United States and Porto Rico, $12,745.73 of which being alloted to the latter place.

Under authority of the above-mentioned act the sum of $24,450.50 was expended for the construction of an additional ward at the Army and Navy General Hospital, Hot Springs, Ark., which included plumbing and gas piping.

### WATER SUPPLY, SEWERAGE, HEATING, LIGHTING, ETC.

During the fiscal year the sum of $524,732.33 was expended from appropriation "Army transportation" for structural water supply, sewerage, drainage, and plumbing; $180,195.97 for roads, walks, grading, bridges, etc.; $35,201.03 for wharves, and $195,281.91 for unclassified items relating to work under the above-mentioned heads.

From the appropriation "Regular supplies" the sum of $272,776.92 was expended during the fiscal year for heating, lighting, and cooking apparatus; construction of bakehouses, etc.

### CONSTRUCTION OF ARTILLERY POSTS.

Considerable progress has been made during the past fiscal year in connection with the erection of new buildings, alterations, and additions to existing structures, and other improvements at the various artillery posts in the United States with a view to providing and increasing the accommodations at these posts. A portion of the work at said posts has already been completed and a portion is under contract and in course of construction. Much remains, however, to be done to provide complete accommodations for the full garrisons required for one relief for the guns. The work will be carried forward as rapidly as funds now available and future appropriations by Congress will admit. Detailed information showing the various buildings and other improvements authorized at these posts is set forth in the accompanying report of the officer on duty in this office who has special charge of this branch of the work.

### DESTRUCTION BY STORM.

The terrible storm that visited Galveston, Tex., on September 8, 1900, entirely destroyed the following buildings at the places as set forth below:

*At Fort San Jacinto.*—Twenty-one frame buildings, including one barrack building, four sets of officers' quarters, noncommissioned officers' quarters, storehouse, shops, stable, bakehouse, administration building, hospital, hospital stewards' quarters, mess hall, and oil house.

*At Fort San Jacinto (10-inch gun battery).*—A temporary storehouse, barrack, mess house, and oil house.

*Fort Travis (Bolivar Point).*—A wharf, a temporary storehouse and a temporary oil house.

*Camp Hawley.*—A barrack, 3 sets of officers' quarters, bachelor officers' quarters, hospital, storehouse, guardhouse, mess hall, bath house, bakehouse, etc.

*Fort Crockett.*—In June, 1900, contract was made for the erection of the necessary buildings at this point, costing $67,832.48, including plumbing and electric wiring. Only a small portion of the work had been accomplished when it was destroyed by the above-mentioned storm.

### CONSTRUCTION AT INTERIOR POSTS.

The construction of barracks for one company at Fort Meade, S. Dak.; bachelor officers' quarters and two double officers' quarters at Fort D. A. Russell, Wyo., and a double set of officers' quarters and a barrack for 100 men at Fort Lincoln (Bismarck), N. Dak., have been completed.

### JEFFERSON BARRACKS, MO.

The construction of new administration building, oil house, addition to storehouse, roads, driveways, sinking well, and the grading and extension of sewer system at this post was contracted for in June, 1900, at a cost, including plumbing and electric wiring, of $89,785.30, and the work is now in progress.

### FORT LEAVENWORTH, KANS.

Congress, under appropriation "Military posts," act approved March 3, 1899, provided $50,000 for the erection of barracks, quarters, gun sheds, and stables for one battery of light artillery at Fort Leavenworth, Kans. Congress also, by joint resolution approved February 9, 1900, set aside $60,000 from the hospital appropriation for the fiscal year ending June 30, 1900, for the construction of a hospital at this post. The Secretary of War on April 4, 1900, allotted a further sum of $200,000 from the Regular Army appropriations of the fiscal year 1900, making a total of $310,000 available for the reconstruction and enlargement of this post. Steps were at once taken to begin work, and on June 11, 1900, the following buildings were placed under contract and work commenced, the total expenditure involved being $303,469.77:

One hospital (48 beds).
Eight double officers' quarters (16 sets) and bachelor officers' quarters (24 sets).
One artillery barrack for 120 men.
One light-artillery stable.
Two cavalry stables.
One light-battery gun shed.

### GENERAL HOSPITALS.

To complete the general hospital at the Presidio of San Francisco Cal., a guardhouse, a dining hall and kitchen for officers, a boiler and power building with heating and lighting plant, a filtration plant, and a refrigerating plant were erected and numerous improvements made during the year to grounds and buildings at a cost of $69,000.

Since the close of the fiscal year the buildings and appurtenances of the hospital at Savannah, Ga., were sold at public auction for the sum of $17,100 and the lease of the hospital site terminated.

Steps have also been taken to dispose of the buildings of the Josiah Simpson Hospital near Fort Monroe, Va.

### FORT BAYARD SANITARIUM.

Fort Bayard, N. Mex., having been discontinued as a military post, and a sanitarium established there for officers and enlisted men suffering from tuberculosis, the sum of $24,222.66 has been allotted from appropriations of the Quartermaster's Department for repairs to buildings, water supply, and sewer improvements at that place.

During the fiscal year the approximate sum of $241,415.38 was expended for preparing camp grounds and restoring same to former condition, which includes the expenditure of $165,634.93 for the model and regimental or casual camps at the Presidio of San Francisco and the detention camp at Angel Island, California.

### SPECIAL EXPENDITURES.

The cost of building material purchased in the United States and of labor and additional material employed in the construction of shelter for troops, structural water supply, during the fiscal year, from appropriation "Barracks and quarters and Army transportation," amounts, as far as reported, to $234,037.91 for the department of Porto Rico, $353,664.94 for department of Alaska, and $211,932.24 for division of the Philippines.

### REIMBURSEMENT OF EXPENDITURES MADE BY QUARTERMASTER'S DEPARTMENT IN CUBA.

The President on July 11, 1899, having directed that thereafter all expenditures necessary for construction, repair, or lease of buildings or wharves for public purposes in Cuba be paid for out of the revenues of the island, upon the authorization and approval of the division commander, all expenditures made in Cuba from barracks and quarters appropriation for the above-mentioned purpose subsequent to July 11, 1899, have been reimbursed from Cuban revenues.

In accordance with the instructions of the Secretary of War, the sum of $342,611.84 was on January 4, 1900, reimbursed the United States from Cuban revenues, on account of the construction and equipment of the railway and wharf at Triscornia (Habana Bay), this being the total expenditures reported for this purpose to September 30, 1899.

### CONSTRUCTION OF BUILDINGS AT POSTS IN ALASKA.

The posts at Fort Egbert and Fort Gibbon were partially constructed during the last year. The construction of new posts at Fort St. Michael, Cape Nome, and Port Valdez was commenced in the spring of 1900, lumber for the purpose being purchased at Seattle and Tacoma, Wash., and corrugated iron, hardware, etc., in the most advantageous markets and shipped to Alaska.

### FORT EGBERT, ALASKA.

At this post buildings for the accommodation of a company of infantry have been completed, consisting of a barrack, three officers' quarters, a hospital, a bakery, five storehouses, an administration building, a sawmill, a guardhouse, an ice house, and a barn. An additional storehouse, a stable, employees' quarters, and three noncommissioned officers' quarters were in course of construction at the close of the year. Total cost, $69,673.15.

### FORT GIBBON, ALASKA.

At this post one barrack, four officers' quarters, a hospital, three storehouses, a sawmill, a building for pilot, scout, etc., a bath house, and an ice house were completed on July 25, 1900. An additional barrack, four officers' quarters, an administration building, a bakery, and a guardhouse were under construction, to accommodate in all about two companies of infantry. Approximate cost, $63,545.30.

### FORT LISCUM (VALDEZ), ALASKA.

For this post there has been authorized two single and one double officers' quarters, one noncommissioned officers' quarters, a barrack building for 100 men, an adjutant's office, a guardhouse, an amusement room, a bath house, a hospital, three storehouses, a stable, a forage house and corral, a bakehouse, a shop building, an oil house, etc., costing $38,500.

### FORT DAVIS (CAPE NOME), ALASKA.

The construction authorized at this post consists of one single and three double officers' quarters, two barracks for 100 men each, an adjutant's office, a guardhouse, an amusement room, a bath house, a hospital, three storehouses, a stable, a forage house and corral, a bakehouse, a shop building, an oil house, etc., costing $57,000.

### FORT ST. MICHAEL, ALASKA.

At this post the construction of one single and three double officers' quarters, two barracks for 100 men each, an adjutant's office, a guardhouse, an amusement room, a bath house, a hospital, three storehouses, a stable, a forage house and corral, a bakehouse, a shop building, an oil house, etc., has been authorized; also an administration building, quarters for clerks, and quarters for other civilian employees in connection with department headquarters. Total cost, $62,463.

### SPECIAL PROJECTS IN ALASKA.

An expenditure of $49,975 was authorized for the construction of the road from Fort Valdez to Eagle City; $4,730 for two distilling plants; $3,125 for condensing plants and fire extinguishers, and $11,808.49 for other miscellaneous purposes.

### RESERVATIONS.

Under the act approved March 1, 1890, all the lots (25 in number) comprising the military reservation of old Fort Bliss, Tex., have finally been disposed of and the sum of $15,412 realized therefrom.

Ten lots still remain unsold of the grounds comprising old Fort Brady, Mich. These lots are in charge of the quartermaster at Fort Brady, to whom application for purchase can be made.

Under the authority of the Secretary of War of May 3, 1899, lots Nos. 145, 146, and 147 of the Tybee Beach Company's lands, fronting on the northwest 285 feet on the light-house road, on the northeast 166 feet on the proposed extension of Alger street, on the southeast 337 feet on the lands of Naylor, and on the southwest 295 feet on the right of way of the Tybee division of the Central of Georgia Railway, title to which was favorably reported on by the Attorney-General, were, on August 14, 1899, purchased at a cost of $400.

In order to control the water supply for Fort Columbia, Wash., the Secretary of War, on May 4, 1899, authorized the purchase of lots 1, 2, and 4 of the Willamette meridian, covering about 53 acres adjoining said reservation, from the Northern Pacific Railroad, which was accomplished at a cost of $212.60. In connection therewith, the President, on May 8, 1899, reserved for same purposes lot 9 of the Willamette meridian, Pacific County, covering about 33 acres.

## SEACOAST LANDS.

Under the acts of Congress approved July 1, 1898, and March 3, 1899, appropriating $150,000 for the purchase of suitable sites, the following purchases have, by authority of the Secretary of War, been made during the past fiscal year, after favorable opinion by the Attorney-General regarding title, viz:

| | |
|---|---|
| 15 acres at Long Island Head, Mass. (Fort Strong) | $18,541.41 |
| 111 acres at Delaware City, Del. (Fort Du Pont) | 10,000.00 |
| 120 acres at Northpoint, Md. (Fort Howard) | 25,114.28 |
| 23 acres at Portland Head, Me. (Fort Williams) | 50,000.00 |
| 5 acres at Fort Preble, Me | 10,000.00 |

Efforts are now being made to secure land at Fort Mott, Finns Point, N. J.; Hawkins Point, Md.; Sullivans Island, S. C., and Fort Constitution, N. H.

Under the act approved February 9, 1900, a tract of land in the city of Galveston, Tex., containing 60 acres, more or less, including a house of 10 rooms on the land and certain streets within the tract containing some 10 acres, vacated for the Government, was offered to the Government by the Galveston Land and Improvement Company for $126,000. This offer was accepted by the Secretary of War, and after favorable opinion on the title the purchase money was paid and deeds of transfer executed.

## REFRIGERATING PLANT AT MANILA.

The work in connection with this large plant, a description of which was given in my last annual report, after some unavoidable delays, is now well under way, and its completion is expected by February next. The entire expense of this plant is borne from the island funds.

Ice machines have also been provided the subsistence department at Iloilo, Jolo, and Cebu out of the Philippine Islands funds.

Three large and six small distilling plants, 300 Waterhouse-Forbes water sterilizers, 4 Smith cremators, 132 Pasteur, 82 Berkfeld, and 101 Maignen filters were provided for use of the troops serving in the Philippines.

## SUPPLY OF TROOPS IN THE MILITARY DEPARTMENTS IN THE UNITED STATES.

During the past fiscal year the troops serving at the various posts and stations in the eight military departments in the United States were promptly and fully supplied by this Department. The equipment of volunteer organizations, their encampment, and the movement of troops, animals, and property generally, together with the purchase of a large number of cavalry and artillery horses and other animals required for foreign service, increased to a considerable extent the labor of all the Department chief quartermasters.

At Vancouver Barracks, Wash., Department of the Columbia, three camps with hospital equipment were established for use of volunteer organizations recruited there. These camps were provided with water and sewer connections, which were connected with the post systems. After the departure of the volunteers the movable effects of the camps were stored, but with little effort camp accommodations could now be provided for a regiment of infantry.

At Fort Riley (Kans.) Military Reservation, Department of the Missouri, a large number of mules sent from Southern posts were grazed and recuperated for service in the Philippines.

The work of remodeling the old post-office building at Omaha, Nebr., for use as department headquarters has been completed, and the general offices of the department now occupy the same.

At Chicago, Ill., Department of the Lakes, extensive purchases of shoes and various other quartermaster supplies were made.

At the Presidio of San Francisco, Cal., Department of California, a model camp which will accommodate 5,000 men has been constructed for the accommodation of outgoing and incoming troops. The camp is provided with the necessary buildings, which are constructed of rough lumber, battened, with shingle roofs; the kitchens are provided with ranges and the dining room with stoves, tables, and benches; bath houses are provided with water heaters and boilers; the latrines are properly constructed and have water connections.

A similar camp to accommodate 2,000 men has been constructed at Angel Island, Cal., for use as a detention camp for returning volunteers with infectious or contagious diseases.

Four regimental camps have also been established at the Presidio. These camps were completed in September, 1899, and have been occupied more or less since completion. The structures erected have been built with a view to their permanency. The buildings, camp kitchens, etc., are of wood, with shingled roof and battened sides, and are solidly constructed. The latrines are equipped according to the system of closet trough adopted by the War Department. All tent floors are elevated, more or less, above the surface of the ground, according to its formation, and each tent is supplied with a heating stove.

The kitchens are equipped with cooking ranges, with hot and cold water, and each has a standpipe and slop hopper on the outside, properly sewered and trapped. On one side of each kitchen is a wash room, extending the entire length of the building, supplied with zinc-lined wooden trough, with faucets for washing purposes, etc., all sewered and trapped. The kitchens are each 24 by 32 feet, being built large enough to afford messing facilities in rainy weather. Each regimental camp has three bath houses, each equipped with six showers, with hot and cold water.

These camps, from a habitable and sanitary standpoint, including water and sewer system, are as perfect as it is possible to make them. Their capacity is approximately 6,500 men.

With a view to providing facilities for caring for and feeding the large number of horses and mules sent to the Presidio for shipment to the Philippines, a corral was constructed at the Presidio on the low ground below and east of the present cavalry stables. This corral is 500 by 250 feet, divided into separate stables, with roof, galvanized-iron feed boxes and watering troughs, and with sheltered accommodations for 1,000 animals.

## DEPARTMENT OF ALASKA.

Maj. G. S. Bingham, quartermaster, U. S. Volunteers (captain and assistant quartermaster, U. S. A.), was on February 9, 1900, assigned to duty as chief quartermaster, Department of Alaska. He reported at Seattle, Wash., on April 3, 1900, and assumed his duties in connection with the shipment of all necessary supplies from that port for Alaska, and the hire of the mechanics and other employees required. He left Seattle on the transport *Lawton* for Fort St. Michael, Alaska, on June 6, 1900, where he arrived on June 22, 1900.

The transports *Egbert*, *Rosecrans*, *Lawton*, *Seward*, and the chartered steamship *Athenian*, were dispatched from Seattle for Alaska at various dates between April and September, 1900, carrying 26 officers, 565 enlisted men, 291 civilian employees, 86 animals, 3,681,000 feet of lumber, and a full supply (about 2,310 tons) of building materials for construction of barracks and quarters, and the necessary clothing and equipage and other supplies for the use of the troops serving in the arctic region.

The dispatch boat *Seward* conveyed the department commander, Gen. G. M. Randall, with a detachment of troops, to St. Michael, and has since been in service in Alaskan waters. She will return to Seattle at the close of navigation.

The buildings completed and authorized for the several posts in the Department of Alaska up to the close of the last fiscal year have been previously referred to.

Two distilling plants of guaranteed capacity of 1,200 gallons every twenty-four hours have been sent for use of troops in Alaska.

Since the close of the fiscal year a steamship has been chartered and dispatched to Alaska with a supply of coal for use of the troops during the coming winter.

## GENERAL DEPOTS.

There are six general depots connected with this Department, viz: New York City, Col. A. S. Kimball, assistant quartermaster-general, U. S. A., in charge; Philadelphia, Pa., Col. John V. Furey, assistant quartermaster-general, U. S. A., in charge; St. Louis, Mo., Lieut. Col. D. D. Wheeler, deputy quartermaster-general, U. S. A., in charge; Jeffersonville, Ind., Lieut. Col. C. R. Barnett, deputy quartermaster-general, U. S. A., in charge; Washington, D. C., Maj. T. E. True, quartermaster, U. S. A., in charge; San Francisco, Cal., Maj. O. F.

Long, quartermaster, U. S. Volunteers (captain and assistant quartermaster, U. S. A.), in charge.

The enlarged Army has greatly increased the work required at these important depots. The purchases, manufactures, and issues thereat, and other work incident thereto, has reached very large proportions.

A considerable and important part of the work performed at the New York depot related to the purchase, inspection, and distribution to the Army of the khaki clothing.

At Jeffersonville depot a storage building, costing $14,200, is nearing completion, and when finished will greatly facilitate the storage of wagons and other property at that depot.

At the Philadelphia depot, which includes the Schuylkill Arsenal, an electric-light plant has been established, supplying light for all purposes in the buildings and grounds; also furnishes power to operate sewing machines for the manufacture of tents, barrack bags, etc., as well as for the machines for cutting out of all garments required for manufacture.

A building for inspecting all textile materials, as well as for sponging of all goods requiring such treatment, is now in course of construction and nearing completion, which, when finished, will greatly add to the expediting of this class of work.

The officers in charge of all these large and important depots have had extensive experience, and have performed the work committed to their care in a most satisfactory manner.

### TRANSPORTATION SERVICE AT TACOMA AND SEATTLE, WASH.

By reason of the large demands made upon this Department in supplying the troops in Alaska, Honolulu, the Philippines, and China, the quartermaster's establishment already existing at Seattle, under the charge of Capt. W. W. Robinson, jr., assistant quartermaster, U. S. A., now major and quartermaster, U. S. Volunteers, was made available for the purpose of chartering and fitting up transports, purchasing supplies, and assisting in other important work in connection with sailing of army transports from Puget Sound.

The facilities afforded at Seattle and Tacoma for the accomplishment of this work were utilized by this Department to the fullest extent consistent with the urgent requirements of the service. The Department also availed itself of the facilities afforded at Portland, Oreg.

During the fiscal year 1,608 troops, 620 civilians, 4,053 animals, 26,663 tons of cargo, and 7,671,000 feet of lumber were shipped on chartered and other army transports sailing from Puget Sound.

### CLOSING OF SAVANNAH DEPOT.

Lieut. Col. D. D. Wheeler, deputy quartermaster-general, U. S. A., was sent to Savannah, Ga., on July 1, 1899, to close the quartermaster's depot there and dispose of the property that had been accumulated there. In accomplishing this a large amount of surplus and condemned property, consisting of mules, horses, wagons, etc., were sold at public auction, from which the sum of $69,521.27 was realized. On October 12, 1899, this depot was discontinued.

### CLOSING OF CAMP MEADE, PA.

Work in relation to Camp Meade was completed on January 17, 1900, and the same discontinued.

### DEPOT AT CHICKAMAUGA PARK, GA.

Capt. Moses G. Zalinski, assistant quartermaster, U. S. A., is in charge of the quartermaster's office at Chickamauga Park, Ga. The work there during the fiscal year consisted largely of storage and shipment of quartermaster's supplies, mainly means of transportation.

This establishment has recently been largely reduced, and steps are now in progress looking to its early discontinuance.

### DEPOT AT SAINT ASAPH, VA.

This depot is located between this city and Alexandria, Va., about 6 miles from Washington and 2 miles from Alexandria, on the Mount Vernon Electric Railroad and the Southern Railway. It has been under charge of Capt. E. H. Parsons, assistant quartermaster, U. S. Volunteers, and been largely used during the past fiscal year as a depot to accommodate public animals, means of transportation, and other quartermaster supplies sent there from other points. A large number of animals have been rested and recuperated there, and means of transportation repaired, and then shipped to other places where needed.

This depot has now, to a great extent, served the purpose for which it was established. Considerable reduction in the expenses has recently been made there, and it is thought that very soon the expenses can be further reduced and probably its further use as a depot can be entirely dispensed with.

### DIVISION OF CUBA.

Lieut. Col. C. F. Humphrey, deputy quartermaster-general, U. S. A., was chief quartermaster of the Division of Cuba, at Habana, during the past fiscal year. He performed the important duties committed to him most satisfactorily.

That officer reports that the transportation of troops and supplies from and to Cuba during the past fiscal year has been confined almost exclusively to ships of the regular transport service; that the building and construction work remaining unfinished there at the close of the last fiscal year has been completed. Very little other work of this character was done during the past year, and the cost of such as has been done has been reimbursed the Quartermaster's Department from revenues of the island, or paid for directly from funds derived from that source.

The transfers and expenditures made through his office during the past fiscal year from the various appropriations pertaining to the Quarmaster's Department amount to $2,474,238.12.

The sum of $663,202.10 was reimbursed to the Quarmaster's Department during the year from insular funds on account of expenditures made from Quartermaster's appropriations for barracks and quarters, rents, water and sewer system, well boring, military railroad, etc.

The total disbursements from island funds from date of United States occupation in Cuba to June 30, 1900, made through his office, amounted to $1,257,696.20, which includes the sum of $174,499.15, which was expended on account of Military Hospital No. 1.

The total expenditures as above given does not include disbursements made for purchase of furniture and supplies for public schools of the island, which have been paid for by warrants on the treasurer of the island, on accounts prepared and certified by his office.

Colonel Humphrey in this connection reports that in addition to the regular duties of the Quartermaster's Department pertaining to his office, and aside from the disbursements of revenues of the island and the care of a large quantity of insular property, the handling of furniture and supplies for the public schools of the island has added greatly to its labors in every way.

That in response to advertisements issued by Headquarters, Division of Cuba, January 6, 1900, bids were opened February 15, 1900, by the chief quartermaster, Division of Cuba, for furnishing furniture and supplies for the public schools of the island of Cuba. The awards were made by a board of officers especially convened for that purpose.

On the bids thus received and awards made, contracts were entered into by the Chief Quartermaster with 14 different dealers and manufacturers for the following specified furniture and supplies, viz:

100,000 desks.
16,669 rear seats.
3,000 book cases.
2,000 teachers' desks.
3,000 chairs.
4,000 dozen erasers.
60,000 board strips.
3,000 maps.
1,500 hand bells.
3,000 clocks.
3,000 ink wells.

These supplies were ordered shipped to Habana, Matanzas, Sagua la Grande, Caibarien, Nuevitas, Gibara, Baracoa, Guantanamo, Santiago, Manzanillo, and Cienfuegos, Cuba, and from these ports distributed to 122 different muncipalities for which intended. The labor of receiving, inspecting, and reshipping to destination of this furniture involved unpacking for inspection and repacking for distribution by rail, water, and wagons, necessitating the handling of this enormous stock several times.

In the Department of Santiago and Puerto Principe and the Department of Matanzas and Santa Clara large shipments were also made, and in the former the work was greatly increased by the remoteness of the various municipalities from seaports and the almost total absence of inland transportation facilities. Government means of transportation was used at the various ports and municipalities whenever available.

The furniture and supplies when received were receipted for by the alcaldes of the various municipalities, who are to account for same to the civil authorities of the island, to whom such receipts are transmitted through the adjutant-general of the division.

The establishment of these schools with necessary equipment complete, in connection with the sending of about 1,300 school-teachers to the United States for practical tuition and observation, thus enlightening them on many subjects of which they might otherwise remain in ignorance, will result in a great permanent benefit to the people of the island of Cuba.

Colonel Humphrey's reports show that 4,336 persons and over 22,000 tons of supplies were transported to and from Habana during the year, and that $8,629,852.33 in funds were received and sent from

Habana in army transports. That these large shipments have been made safely and promptly he submits is evidence of the efficiency of the transport branch of the service, by which this work was accomplished.

That this service on the Atlantic and Pacific oceans should have grown to its present proportions and unquestioned efficiency in so short a time and under such circumstances of emergency in its commencement establishes the ability of the Quartermaster's Department to organize, equip, and operate this branch of the service with success.

### DEPARTMENT OF MATANZAS AND SANTA CLARA, NOW FORMING A PART OF THE DEPARTMENT OF WESTERN CUBA.

Maj. W. H. Miller, quartermaster, U. S. A., was chief quartermaster of this department. He reports that during the past fiscal year there has been no change in the general conditions; that the troops have been supplied promptly and well with all needed quartermasters' supplies; that the post of Hamilton Barracks, the construction of which was well advanced at the close of the previous fiscal year, has been completed. The post at Rowell Barracks, at the mouth of the harbor of Cienfuegos, has also been completed.

### DEPARTMENT OF HABANA AND PINAR DEL RIO, NOW FORMING A PART OF THE DEPARTMENT OF WESTERN CUBA.

Maj. George S. Cartwright, quartermaster, U. S. Volunteers, was chief quartermaster from May 31, 1900, until the close of the fiscal year.

He reports that the work of improving the posts throughout this department has been carried out under the direction of their respective quartermasters, acting under the direction of the different post commanders, upon allotments approved from department headquarters, and that the largest expenditure during the year under the quartermaster's department has been at Columbia Barracks, where a most complete post has been constructed. This work has been under the immediate direction of Capt. George L. Goodale, assistant quartermaster, U. S. Volunteers.

### DEPARTMENT OF SANTIAGO AND PUERTO PRINCIPE, NOW DEPARTMENT OF EASTERN CUBA.

Capt. Charles M. Augur, assistant quartermaster, U. S. Volunteers, was acting chief quartermaster of this department from July 1 to November 22, 1899. After the latter date Maj. J. B. Aleshire, quartermaster, U. S. Volunteers, assumed the duty of chief quartermaster of this department.

By reason of a yellow fever epidemic it became necessary on July 10 and 12, 1899, to remove the quartermaster's establishment, along with the other military offices, from Santiago to Cristo, some 12 miles northeast of the former city. This move, however, did not materially delay the supply of all needful quartermaster stores to the troops serving in the department. On October 24, 1899, the offices of the chief and depot quartermasters returned to Santiago.

The quartermaster's depot at Gibara was abandoned January 9, 1900, and the depot at Nuevitas was in course of abandonment at the close of the fiscal year.

During the year the troops in this department have been satisfactorily supplied.

The wagon and mule transportation in the department, with few exceptions, are reported by the chief quartermaster to be in good condition.

The fuel used consists of wood, charcoal, and bituminous and anthracite coal. The coal is received from the States. The price of wood in this department ranges from $3 to $8 per cord. Native wood is stated to be cheaper and more satisfactory for use in Cuba than wood received from the United States.

The troops in this department are quartered in old Spanish barracks or other public buildings. The officers are quartered generally in rented buildings. The offices are, as a rule, located in Spanish buildings. Storehouses, with few exceptions, are rented. Hospitals are in old Spanish hospitals or barracks. With few exceptions the barracks occupied by the troops are large and roomy, and make excellent and satisfactory quarters.

### DEPARTMENT OF PORTO RICO.

Maj. John L. Clem, quartermaster, U. S. A., is chief quartermaster of this department. He was assisted during the fiscal year by Maj. Thomas Cruse, quartermaster, U. S. Volunteers, and Capt. W. C. R. Colquhoun, assistant quartermaster, U. S. Volunteers.

It is shown from the reports of these officers that the work pertaining to the quartermaster's department in Porto Rico has been promptly and satisfactorily performed during the past fiscal year.

The terrible hurricane that visited the island on August 8, 1899, swept away vast amounts of property, making it necessary to promptly equip wagon and pack trains to supply the troops at outlying stations, and, besides, the quartermaster's department was intrusted with the duty of delivering relief supplies to the destitute in all parts of the island. The freighting of food to the interior towns was a work of great magnitude.

At a number of the posts in the island building operations had been begun and had almost been completed when they were wrecked by the hurricane. The work of reconstruction was at once commenced and new modern buildings erected for the accommodation of the troops, so that at the close of the fiscal year the marks of the destruction by the hurricane at the said posts were practically obliterated.

All the buildings used by the military authorities at San Juan were thoroughly overhauled and necessary repairs made.

Owing to the change from the military to the civil government on May 1, 1900, it became necessary to move the military headquarters from the palace. The properties at Nos. 3 and 5 Fortaleza street, together with the old military arsenal in the rear, were selected, and they were soon conformed to meet all requirements, and, on April 30, 1900, the department headquarters moved in, leaving the palace for the new civil government inaugurated the following day.

The posts at Arecibo, Adjuntas, and San German have been abandoned, and to this extent has lessened the work of the quartermaster's department.

During the year the two quartermaster's offices at Ponce were consolidated, resulting in considerable saving of expense.

The total amount of freight received at San Juan during the fiscal year amounted to 76,000,000 pounds, of which about 32,000,000 pounds consisted of relief supplies, which were distributed under the direction of Major Cruse to every part of the island by boat, rail, wagon, and pack trains. This work of distribution of relief supplies was begun on August 16, 1899, and continued until June 28, 1900. The amount expended from quartermaster's appropriations in connection with the distribution of the relief supplies, Major Clem states, amounted to $62.326.41.

### HONOLULU.

Maj. George Ruhlen, quartermaster, U. S. A., was the officer of this department who was charged with the duties pertaining to the quartermaster's department at Honolulu, which were administered by him most efficiently.

That officer reports that two batteries of the Sixth U. S. Artillery now constitute the garrison of United States troops at Honolulu. They are located in quarters on a small tract of leased ground at a place called Camp McKinley, 4½ miles from the business center of Honolulu, but within the municipal limits of that city. No definite action looking to the selection of a permanent site for a military post or garrison in the Hawaiian Islands has yet been taken.

He states that troops in garrison or in camp or cantonments of a permanent character in the Hawaiian Islands should, for comfort as well as for reasons of economy, be sheltered in frame buildings rather than under canvas, the climate, especially along the seashore, being very detrimental to canvas. The same applies to the shelter for stores and property.

Major Ruhlen also states that building operations, during the past fiscal year, were confined to the erection of stables, sheds, corrals, and other structures incident to providing accommodations for public animals en route from the United States to the Philippines. A tract of 53 acres of unimproved ground, about 2½ miles from the water front, was leased and the necessary buildings erected thereon for the accommodation of said animals. The place is well adapted for the purpose and is the nearest available ground to the place of discharging and loading the animals that could be secured.

He reports that his attention has frequently been called by officers in charge of troops on transports stopping there to the limited facilities, or rather total absence of facilities, for recreation, rest, and exercise on shore of their men while in the harbor of Honolulu, under conditions which would admit of removing the men from the ship, except for meals, so that bedding could be taken out, cleaned, and aired, and the compartments of the holds or decks occupied by men at night thoroughly washed, ventilated, and dried. There are no public grounds or vacant lots where even a company can be formed, and the only places available for such purposes are the narrow streets of the city, where there is always more or less interference with traffic. Various measures for providing means of recreation, shelter, and bathing facilities for men on transports have been suggested to him by officers who appreciate the necessity and have knowledge from personal observation and experience of the lack of them there.

Major Ruhlen thinks that the only proper remedy is the erection of a large building on the so-called "Barracks lot," situated near the center of the city of Honolulu, not more than half a mile from the water front, and reserved by the President for military uses. This building should be liberally equipped with plunge and shower baths and sanitary facilities, and appliances for athletic exercises, and have sufficient floor space in its basement and first and second floors to afford sleeping room for the number of men stated. When not used by men from transports it could be utilized by Territorial military organizations as an armory and drill hall, and would also serve as a place of assembly and temporary shelter for troops called into service there under any emergency that may arise. Provision could also be made in the building, or in connection with it, for administrative offices and storehouses for all supply departments of the Army, thus doing away with all the places now held for such purposes under leases and at high rates of rent.

On December 12, 1899, several cases of the bubonic plague were discovered among the Asiatic population of Honolulu, and other cases occurred at intervals until March 30, 1900, but no person connected with the military service was taken with the disease nor exposed to infection necessitating individual quarantine. The only direct effect of the plague upon the military service was the quarantine restrictions which prevented for a time the free use of Honolulu as a port by the transport service.

### PHILIPPINE ISLANDS.

Maj. C. P. Miller, quartermaster, U. S. A., is chief quartermaster, Division of the Philippines, and has performed his duties in the most satisfactory manner.

Maj. Robert R. Stevens, quartermaster, U. S. Volunteers (captain and assistant quartermaster, U. S. A.), is chief quartermaster, Department of Northern Luzon; Maj. Isaac W. Littell, quartermaster, U. S. Volunteers (captain and assistant quartermaster, U. S. A.), is chief quartermaster, Department of Southern Luzon, and Maj. John T. Knight, quartermaster, U. S. Volunteers (captain and assistant quartermaster, U. S. A.), depot quartermaster at Manila.

In addition to the foregoing officers there are now twenty other (regular and volunteer) officers of this department on duty in the Philippines assisting in the important work of the quartermaster's department in those islands.

Major Miller states that upon the regular officers of the department has fallen the important duties of chief quartermaster of the larger departments, depot at Manila, and in charge of water transportation, where experience and knowledge of the general work of the department is necessary. Much of the work, however, has been done by the volunteer quartermasters, and with rare exceptions they have rendered fine service. Two are chief quartermasters of departments, many others chief quartermasters of districts, and one is assistant to chief quartermaster of the division. That they are satisfactorily filling their places proves their value.

The chief quartermaster states that the Army, on August 31, 1899, had possession of the country in the vicinity of Manila; on the railroad north to Angeles, with the railroad repaired and in use to San

Fernando; on Laguna de Bay to Calamba, and from Bacoor to Imus. In the southern islands there were garrisons at Iloilo, Cebu, Jolo, and small garrisons on some of the small islands in the vicinity of Jolo.

The rapid advance of the Army, the establishment of new posts, and the supply of these posts has made the work of the supply department, with the limited means at hand, one of great difficulty. This can be better understood when it is considered that this expansion has been from a few posts near the base of supply to over 350, many of them situated at remote and almost inaccessible points. The establishment of sub-depots for the different districts and regular guarded trains of supplies from the sub-depots to the outlying posts have been a necessity.

A large number (in fact all that have been asked for) of mules, wagons, and cavalry horses have been shipped in from the United States, until now the command is fairly well supplied with transportation and cavalry horses. More will be required from time to time to meet losses and supply additional posts as they are necessarily established.

The depot at Manila has grown to meet the demands for the supply of over 60,000 men. When it is considered that all of the supplies for this large force have to pass through the depot at Manila; that all of the vessels bringing supplies there have to anchor 2 miles or more from the depot; that at times as many as 19,000,000 pounds have to be unloaded in two weeks, a million pounds a day a fair average, it will be appreciated what the work is. It requires a large force of men and a large number of steam launches and lighters to do the work, supplemented by cascoes and lorchas. It is necessary for the Government to own its launches and lighters and, as rapidly as possible, they have been purchased and the number of hired cascoes and lorchas correspondingly reduced.

A system has been adopted of organizing depots of supplies for the Departments of Northern and Southern Luzon, to which all supplies will be issued in bulk from the main depot and to which all requisitions will be sent for supply after approval at the headquarters of the department. This will relieve, to some extent, the excessive work at the central depot and result in more prompt supply to the troops of the stores required.

## CHINESE LITTER BEARERS.

Four Chinese litter bearers for each company were allowed. During action these men were of great use in carrying off the dead and wounded and in bringing up ammunition, and, considering their class and small pay, showed commendable courage in their work. While they would hug the ground and shake with fear during an action, when ordered forward for work which they recognized as theirs with rare exceptions they were up and off intent upon their duties, their fear forgotten. When the active campaigning with large bodies of troops was over, it was deemed expedient to dispense with their services.

## NATIVE PONIES.

These are small horses capable of doing a great deal of work when used with care. They have been used largely for messenger service and for hauling company rations in a small light cart with springs.

They have been used also to some extent for scouting. The necessity for their use in the army and their limited supply has raised their value from $25 to $100 Mexican, or more.

### CARABAOS.

The carabao has been of great service to the army in the Philippines, but he is slow and tries the patience of a commander when celerity of movement is necessary for success. Five miles a day on a fair road is all that can be expected, and 2 miles has been the maximum over some of the roads during or after a rain. In dry weather great care has to be used to throw water over them frequently or they will not live. Their most successful work was done when hitched up tandem under General Lawton in his campaign north, and under General MacArthur when advancing up the railroad, in hauling supplies between breaks in the roads. During the past few months they have been attacked by rinderpest, which has killed large numbers of them. Fortunately the mule transportation has now largely taken the place of the carabao, and the army has not felt seriously the loss of this animal.

### WATER TRANSPORTATION.

The question of water transportation in the harbors at the large number of posts occupied has been a difficult one. As there is rarely sufficient depth of water for the vessels to go within a mile of the docks, some means had to be provided for transporting the stores to land. Launches have been provided for the most important harbors; at others two bancas have been fastened together, upon which is built a platform for the stores. Large rowboats have been contracted for in Hongkong, and the delivery will soon commence. These will be supplied the smaller posts on the coast.

For a time, owing to the closed ports, the department was able to secure inter-island steamers of from 150 to 600 tons capacity at a reasonable cost. The owners had little use for them and were glad to charter them to the Government for almost any price. When the ports were opened, all of the boats were required at once and the owners could get almost any price for them, and there was then considerable difficulty in keeping the posts supplied. It was done, however, by keeping some of the vessels as a military necessity and by shipping stores on commercial liners on the return trip of the vessels to hemp ports and by use of the *Pennsylvania* and *Indiana* as supply ships. Freight charges on commercial lines are very high, but it is the policy to use them when reasonable rates can be obtained.

### CLOTHING.

Major Miller reports that the khaki now received from the United States wears well, holds its color, and gives general satisfaction; that the Hongkong clothing is made of good English khaki, holds its color, and wears well, but it is not made up in as good shape as that received from the United States.

### HORSES AND MULES.

It has been a source of great satisfaction to find that horses and mules brought to the Philippines from the United States so soon become acclimated and keep in good condition. Even without American forage, rice straw, unhulled rice, and native grass makes a good substitute and keeps the animals in good flesh. A few are lost by sunstroke and quite a number from glanders, but where care is used not to overwork the animals in the middle of the day there is very little loss from heat.

### RAIL TRANSPORTATION.

The railroad extending from Manila to Dagupan came into the hands of the quartermaster's department as the country north was cleared of insurgents. Many of the rails had been taken up and buried, the ties burned, streams of water diverted to the roadbed to wash out the earth and make portions of it a running stream, the engines run together at full speed or dumped into a convenient river, and the bridges partially or wholly destroyed. This was the situation upon some portions of the road, but upon other parts the insurgents were driven back too rapidly to give them the opportunity to do more than temporary injury. Under the able management of Maj. C. A. Devol, the depot quartermaster, ties were purchased in large quantities in Japan; rails, etc., from the United States; engines raised from the beds of the streams and repaired; rails dug up that had been buried, and the roadbed and railroad repaired in time to keep the army north supplied. The work was subsequently turned over to Captain Sibert, Engineer Corps, who handled the road and repairs with good judgment and displayed in its management fine executive ability. When the country along the road settled down and there was a demand for cars for shipping in rice and other products, the road was turned over to Mr. Higgins, its original manager.

### EXPENDITURES.

Major Miller reports the following expenditures during the fiscal year from Philippine funds, exclusive of expenditures made in departments of the Visayas, Mindanao, and Jolo, which will be forwarded later, viz:

| | |
|---|---|
| Construction, Department of Northern Luzon | $21,442.50 |
| Repairs, Department of Northern Luzon | 21,813.90 |
| Construction, Department of Southern Luzon | 11,140.27 |
| Repairs, Department of Southern Luzon | 4,621.78 |
| Rents, Department of Northern Luzon | 6,332.78 |
| Rents, Department of Southern Luzon | 11,397.38 |
| Rents, paid by chief quartermaster of division | 334,922.73 |
| Construction and repairs, miscellaneous | 420,343.99 |
| Structural, water supply | 2,500.00 |
| Sewerage | 64,643.50 |
| Plumbing | 5,389.70 |
| Heating and lighting | 308,373.60 |
| Railway construction | 269,129.31 |
| Refrigerating and ice-making plant | 582,234.64 |
| Total (Mexican) | 2,064,286.08 |
| Army transport service (at Manila and Nagasaki) (gold) | 2,247,595.42 |

The chief quartermaster states that the work of his office has included internal improvements and repairs, the equipment of the collectors and captains of ports and other civil officers as the various ports have been opened for trade, the extent of which can be judged by the expenditures of public civil funds from the 1st of September, 1899, to August 7, 1900, of $5,969,375.57 Mexican.

Accompanying Major Miller's report are the separate reports of the chief quartermasters of the Departments of Northern and Southern Luzon and the depot quartermaster at Manila. These reports give in detail the operations of the Quartermaster's Department in connection with supply of the Army in the field, and show that the work of the Quartermaster's Department in providing for the needs of the Army serving in the archipelago during the past fiscal year reached enormous proportions, requiring the most exacting service on the part of the officers charged with these important and responsible duties. That the work has been efficiently done is evidenced by what has been successfully accomplished under the most trying and adverse conditions. The difficulties attending this service can not be fully appreciated without being understood.

It is further shown by the records that an expenditure of $510,960.82 was made during the fiscal year for the purchase in the States of materials, tools, etc., for construction of buildings, roads, water and sewer systems, and refrigerating plant, and their shipment to Manila. Of this amount, the sum of $255,186.47 was paid from the revenues of the Philippine Islands and the remainder from the appropriations of the Quartermaster's Department.

### SHELTER FOR TROOPS IN PHILIPPINES.

In Manila and throughout the Philippines, where our troops are garrisoned, they are sheltered in old Spanish barracks and other buildings taken possession of or rented. When these are not obtainable, tents are used or temporary Nipa structures are erected.

### DEPOT AT NAGASAKI, JAPAN.

Maj. John McE. Hyde, quartermaster, U. S. A., is depot quartermaster at this station.

This officer has promptly attended to all the quartermaster's business required to be performed at Nagasaki, including the supply of coal and water for our transports touching at that port.

### SUPPLIES FOR TROOPS IN CHINA.

As soon as it was determined to send our military forces into China with a view to rescuing our legationers at Pekin, steps were immediately taken to establish a quartermaster's depot at Taku, China, where an ample supply of the various articles of clothing and equipage and other quartermaster supplies, including hospital and other tents, means of transportation, etc., were promptly shipped for use of our troops while serving there. Capt. J. C. Byron, assistant quartermaster, U. S. A., now major and quartermaster, U. S. Volunteers, was at once dispatched from Manila to Taku to take charge of the preliminary work.

The climate of certain parts of China being very cold in winter, special precautions were taken to provide an adequate supply of extra warm clothing and heating stoves for use of such of our troops as might be required to remain there during the winter. Considering that the regulation conical tent stoves are adapted only to burning wood, and owing to the reported scarcity of this class of fuel in the country referred to, this office devised a cast-iron fire pot and grate suitable for soft coal to be placed inside of the conical tent stove. Experiments with Japanese coal demonstrated that the same answered the purpose fully. A supply of these pots have been procured and ordered to be shipped, and it is believed they will in the future prove a valuable adjunct to the equipment of the Army.

There has also been sent to China for use of the troops serving there 50 Waterhouse-Forbes water sterilizers, also 6 small distilling plants of 600 gallons capacity each twenty-four hours, also a large distilling plant of 3,800 gallons per day capacity, with the various spare parts, which, if not required there, will be sent to the Philippines.

Lieut. Col. C. F. Humphrey, deputy quartermaster-general, U. S. A., is now on duty in China as chief quartermaster of our forces serving there, and has to assist him in the performance of the quartermaster's duties six other officers of the Department. In the event of a reduction of our military forces in China, the surplus quartermasters now on duty there will be sent to the Philippines.

## NATIONAL CEMETERIES.

There are eighty-three national cemeteries.

During the past fiscal year there were 2,244 interments in these cemeteries, making a grand total of 342,242 interments therein to June 30, 1900.

Six thousand nine hundred and thirty three white marble headstones were provided during the fiscal year to mark the graves of known Union soldiers and marines in national and other cemeteries.

Under the act approved March 3, 1899, the sum of $999.78 was expended for repair and preservation of the monuments, tablets, observation tower, roads, fences, etc., made and constructed by the United States upon public land within the limits of the Antietam battlefield, near Sharpsburg, Md.

For the repair to roadways to national cemeteries, which have been previously constructed by special authority of Congress, there was expended during the fiscal year the sum of $9,392.09.

The work of improving the roadways, etc., from Pensacola, Fla., and Natchez, Miss., to the national cemeteries near those places, as authorized by special act of Congress, was completed during the past fiscal year.

Four captured guns were placed in the Arlington National Cemetery to ornament the section in which the remains of soldiers of the war with Spain, returned from Cuba and Porto Rico, have been interred, and two howitzers and a large anchor in the section in which the remains of 165 sailors and marines, victims of the disaster to the battle ship *Maine*, in the harbor of Habana, Cuba, February 15, 1898, are interred, the latter having been buried in this cemetery in December, 1899, with appropriate ceremonies.

At all the national cemeteries the necessary improvements and repairs have been made, and the grounds kept in neat and proper order.

At the Quincy, Ill., cemetery the remains of the 287 soldiers buried in Woodland Cemetery were removed and reinterred in a plat of ground set apart for that purpose in Graceland Cemetery, near that city. Under an agreement with the Graceland Cemetery Association, the soldiers' graves are to be cared for and protected hereafter without expense to the Government.

## OPERATIONS OF THE BURIAL CORPS IN THE PHILIPPINES.

Mr. D. H. Rhodes, a trusted and most efficient employee of this Department, was placed in charge of burial corps which was organized for the purpose of going to the Philippines to disinter and ship to the United States the remains of officers, enlisted men, and others connected with the military service who had been killed in action or died of disease and were buried there.

Mr. Rhodes, with his corps of nine assistants, left Washington on October 12, 1899. After their arrival at San Francisco, Cal., six additional assistants were added to the corps, and a suitable casket selected and adopted for use in the Philippines. The entire burial corps sailed from San Francisco on October 26, 1899, and arrived at Honolulu on November 3. For cogent reasons it was determined to defer the disinterment of the 36 soldiers still remaining there until the return of the burial corps from Manila. This, however, was not accomplished on account of the bubonic plague prevailing at Honolulu when the corps returned home. The burial corps sailed from Honolulu November 4 and arrived at Manila November 22, 1899, and at once set on foot the necessary preliminary arrangements to commence work.

On December 11, 1899, active operations were begun at the Paco Cemetery, and after completing the work there disinterments were made at Battery Knoll and Malate Cemetery, finishing at the latter place on January 19, 1900. This completed the work in the immediate vicinity of Manila.

The corps then continued operations at outside points in various parts of Luzon—made disinterments at Camp Dewey Cemetery, the convent inclosure at Maricaban, and at Corregidor Island. Isolated bodies were disinterred at Cavite and other points, including hospital cemetery at San Roque.

After completing the work of disinterments north of Manila, which was accomplished March 3, 1900, the corps then took up their work in the southern islands.

On April 3, 1900, the corps sailed from Manila and arrived at Iloilo, island of Panay, April 6, and immediately proceeded with disinterring at Iloilo, island of Panay; Bacalod, San Enrique, and La Carlota, Negros Island, and at various other scattered points. Cebu was then visited and disinterments made there. From Cebu the corps went to Zamboanga, island of Mindanao, thence to Jolo, Sulu Island, and from thence to Bongao, making disinterments at these places, which completed the work in the southern islands. The corps then returned to Manila on April 29, 1900.

Having finished their work, the burial corps, in charge of Mr. Rhodes, left Manila on the transport *Grant* on May 15; arrived at San

Francisco Quarantine Station on June 9, and reached Washington, D. C., June 19, 1900.

A total of 1,073 bodies were disinterred by the burial corps in the Philippines, of which only 15 bodies are reported as "unknown."

Mr. Rhodes submits with his report a series of 43 maps and sketches, showing location of cemeteries, burial plots, and graves from which the disinterments in the Philippine Islands were made, together with a reference list for same. Also a summary of all the disinterments made, classified by organizations to which the deceased soldiers belonged, and the towns and places visited, showing the number of disinterments made at each place.

A list of 92 names of those who died of smallpox, or cause of death unknown, whose remains were not exhumed, by orders from the chief quartermaster at Manila, and are in Paco Cemetery, Manila, is also furnished.

### OPERATIONS OF THE BURIAL CORPS IN CUBA AND PORTO RICO.

Mr. Solon F. Massey was specially selected and placed in charge of the burial corps sent to Cuba and Porto Rico, he having heretofore established his fitness for the work.

This corps was organized December, 1899, and on the 30th of that month Mr. Massey with 15 assistants sailed from New York City on the transport *Burnside* for Habana, Cuba. On January 9, 1900, the work of disinterment at Camp Columbia, in Habana, was commenced, and was pursued at various places in all parts of the island until finally completed by the close of February, 1900. Mr. Massey, after closing up various matters pertaining to the work, returned to Washington, D. C., March 31, 1900.

The number of remains disinterred in Cuba by Mr. Massey's corps was 414.

Mr. C. E. Norton, assistant to Mr. Massey, sailed from New York to Porto Rico on January 2, 1900, with two assistants. This party visited various places in Porto Rico, disinterring 36 remains, which were shipped to New York City.

Mr. Massey submits with his report the following papers:

Complete list giving name, rank, company, regiment, and date of death of all persons whose remains were exhumed by the burial corps of 1900, said lists also showing the places where each remains were disinterred and the date of the work.

A list showing the remains arranged according to the organizations to which the persons belonged. The Regular Army and Navy under one heading and the volunteers under another, also the civilians by themselves.

A list by military departments, giving the number of remains removed from each point visited, the date of the work and the seaport from which the various shipments to the States were made.

A list showing the work accomplished by the burial corps in Porto Rico, giving the remains removed by said party.

From all reports received at this office, it is shown that a total of 1,889 bodies of officers, enlisted men, and others were returned to the United States during the past fiscal year, as follows:

| | |
|---|---|
| From Cuba, including 72 yellow-fever cases stored at Santiago last year | 493 |
| From Porto Rico | 37 |
| From Honolulu | 2 |
| From the Philippine Islands (which includes 284 embalmed bodies that were not interred in the Philippines) | 1,357 |
| Total | 1,889 |

Of the above, 984 were returned to relatives and friends; 487 were interred in the presidio of San Francisco National Cemetery; 320 in the Arlington National Cemetery, and 1 in the Cypress Hills National Cemetery; 9 were remains of navy men and were turned over to the Navy Department, and 88 remained at San Francisco, Cal., on June 30, 1900, to be disposed of.

Messrs. Rhodes and Massey, with their assistants, have performed a most delicate and important work in the disinterment and return from the Philippines, Cuba, and Porto Rico of the nation's dead. I take great pleasure in commending them for their valuable services, which they have performed in a most thorough and satisfactory manner.

The officers of this department appreciate the sacred duty of returning to their homes and friends from distant lands the remains of those who gave up their lives in defense of their country, and have endeavored to conduct this duty with every mark of respect to the dead.

## PERSONNEL, QUARTERMASTER'S DEPARTMENT.

The number of officers provided by law for the Quartermaster's Department is as follows:

Regular Establishment:
- 1 Quartermaster-General, with the rank of brigadier-general.
- 4 assistant quartermasters-general, with the rank of colonel.
- 8 deputy quartermasters-general, with the rank of lieutenant-colonel.
- 14 quartermasters, with the rank of major.
- 30 assistant quartermasters, with the rank of captain.
- 1 military storekeeper, with the rank of captain.

Volunteers:
- 30 quartermasters, with the rank of major.
- 40 assistant quartermasters, with the rank of captain.

Under existing law, the term of service of the volunteer officers above referred to expires on July 1, 1901.

During the past fiscal year this department has suffered the loss of two of its energetic and efficient officers. Maj. Guy Howard, quartermaster, U. S. Volunteers (captain and assistant quartermaster, U. S. A.), was killed by the insurgents in the Philippine Islands on October 22, 1899, while in the discharge of his duties. His remains were brought home and laid at rest with appropriate military honors. On January 16, 1900, Maj. John W. Summerhayes, quartermaster, U. S. A., was retired from active service.

Since the close of the fiscal year Col. J. G. C. Lee, assistant quartermaster-general, U. S. A., one of the most experienced and efficient officers of the Department, was transferred to the retired list on account of age.

On September 23, 1900, Maj. George S. Cartwright, quartermaster, U. S. Volunteers, died at Habana, Cuba, of yellow fever. This officer, though young in the service of this Department, had shown himself to be a capable and valuable officer.

## POST QUARTERMASTER-SERGEANTS.

The 105 post quartermaster-sergeants provided by existing law are not sufficient to meet the requirements of the service. Many requests for the services of such sergeants had to be denied by reason of the limited number available. I therefore renew my recommendation of last year that Congress be requested at its next session to provide 150 of these sergeants.

### DETACHMENT ARMY-SERVICE MEN, QUARTERMASTER'S DEPARTMENT, WEST POINT.

This detachment during the past year consisted of 141 men, and was composed of mechanics, laborers, teamsters, and others. It is reported by the commanding officer that the members of this detachment performed their respective duties during the year satisfactorily.

### CIVILIAN EMPLOYEES.

This subject of civilian employees was given most thorough consideration during the past year and such reductions made as to bring the number within the actual requirements of the service. Great care was exercised in selecting from the war-emergency clerks and others holding temporary positions in the Quartermaster's Department at large those to be retained in service and classified under the President's amendment of May 29, 1899, of the civil-service rules. The most efficient and best qualified of these employees, as shown by their two or more years of temporary service, were listed for retention and classification. This list, containing the names of 298 persons, was submitted to the honorable the Secretary of War and was approved by him on June 1, 1900, and later transmitted to the Civil Service Commission. These employees, therefore, were on that date added to the classified force of this Department and made subject to the same civil-service rules as govern the other classified employees of the Quartermaster's Department at large.

### CONCLUSION.

The past fiscal year, like the two preceding ones, has been a period of great activity in the Quartermaster's Department. The responsible and important duties devolving upon it in transporting troops, animals, and all military stores by land and sea, and in furnishing the Army at home and at distant stations with the many quartermaster supplies required, have exacted the most earnest effort on the part of all who have been charged with the work.

In the administration of the affairs of this important supply department during the past year the Quartermaster-General has had the faithful and zealous cooperation of his subordinates in general, and it is a pleasure to him to here record his acknowledgment of the intelligent and valuable service rendered by the efficient officers (regulars and volunteers) and employees of the Department.

The officers on duty as assistants in this office during all the fiscal year were as follows: Majors Bird, Patten, Martin, Hodgson, and Schreiner, and Captain Dare. These officers have rendered most valuable assistance in the transaction of the business of this office.

It is sincerely hoped that Congress at its coming session will provide for an enlargement of the permanent establishment for this Department, in order that its organization may be fixed upon a satisfactory basis before the expiration of the service of the volunteer officers on June 30, 1901.

The enactment of a law imposing no expense on the United States, making provision for the classified civilian employees who have rendered long and faithful service to the Government, and who have been disabled for duty, would, I believe, increase the efficiency of the service. It is thought that House bill No. 15, first session, Fifty-sixth Congress, with proper modifications, would meet the requirements.

Respectfully submitted.

M. I. LUDINGTON,
*Quartermaster-General, U. S. A.*

The SECRETARY OF WAR.

## List of Papers Accompanying Annual Report of the Quartermaster-General Fiscal Year ending June 30, 1900.

1. Annual report of Maj. Charles Bird, quartermaster, U. S. A., for fiscal year ending June 30, 1900.
2. Annual report of Maj. William S. Patten, quartermaster, U. S. A., for fiscal year ending June 30, 1900.
3. Annual report of Maj. M. C. Martin, quartermaster, U. S. Volunteers (captain and assistant quartermaster, U. S. A.), for fiscal year ending June 30, 1900.
4. Annual report of Maj. F. G. Hodgson, quartermaster, U. S. Volunteers (captain and assistant quartermaster, U. S. A.), for fiscal year ending June 30, 1900.
5. Annual report of Maj. F. M. Schreiner, quartermaster, U. S. Volunteers, for fiscal year ending June 30, 1900.
6. Annual report of Capt. J. Z. Dare, assistant quartermaster, U. S. Volunteers, for fiscal year ending June 30, 1900.

# APPENDIX.

War Department,
Quartermaster-General's Office,
*Washington, October 12, 1900.*

General: I have the honor to submit herewith the following report of the operations of the transportation division of this office during the fiscal year ended June 30, 1900.

The following statement shows that during the fiscal year ended June 30, 1900, transportation was furnished, exclusive of transport service, for 747,399 persons, 18,455 animals, and 328,801 tons of material:

| | Railroad. | Water. | Wagon. | Stage. | Government vessel.[1] | Total. |
|---|---|---|---|---|---|---|
| Passengers: | | | | | | |
| Officers | 2,947 | 134 | 2 | 6 | 30,770 | 33,859 |
| Men | 94,600 | 5,787 | 220 | 346 | 612,587 | 713,540 |
| Total | 97,547 | 5,921 | 222 | 352 | 643,357 | 747,399 |
| Animals: | | | | | | |
| Horses | 7,619 | 1,274 | | | 657 | 9,550 |
| Mules | 6,615 | 758 | | | 1,532 | 8,905 |
| Total | 14,234 | 2,032 | | | 2,189 | 18,455 |
| Stores: | | | | | | |
| Subsistence ... tons | 31,110 | 13,564 | 6,466 | | 8,469 | 59,609 |
| Quartermaster ... do | 50,336 | 17,375 | 32,540 | | 9,883 | 110,134 |
| Ordnance ... do | 38,515 | 8,737 | 2,934 | | 2,456 | 52,642 |
| Medical ... do | 1,009 | 989 | 634 | | 232 | 2,864 |
| Signal ... do | 1,352 | 1,003 | 245 | | 223 | 2,823 |
| Miscellaneous ... do | 22,329 | 1,135 | 65,616 | | 11,649 | 100,729 |
| Total | 144,651 | 42,803 | 108,435 | | 32,912 | 328,801 |

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[1] This includes all passengers carried on Government ferryboats plying between military posts and adjacent cities.

## ACCOUNTS AND CLAIMS FOR TRANSPORTATION.

The records show that 4,938 accounts and claims for transportation, amounting to $529,603.96, have been received at this office, examined, and transmitted for settlement during the fiscal year ended June 30, 1900.

Of these, 1,852 accounts, amounting to $389,667.61, were chargeable to appropriations of the War Department for the several fiscal years in which the service was rendered; 3,086 accounts of other Departments, amounting to $139,936.35, exclusive of bond-aided service and telegraph accounts.

*Bond-aided Pacific Railroad companies.*

| | Passengers. | Animals. | Freight. |
|---|---|---|---|
| | | | *Pounds.* |
| Southern Pacific Co. and Central Pacific R. R. Co | 31,921 | 5,226 | 83,692,647 |
| Sioux City and Pacific R. R. Co | 381 | 69 | 1,777,471 |
| Missouri Pacific R. R. Co. (central branch Union Pacific) | 25 | | 595 |
| Total | 32,327 | 5,295 | 85,470,713 |

There were 1,108 accounts for bond-aided service received at this office, amounting to $476,372.18. Of these, 823 accounts were chargeable to appropriations of the War Department, amounting to $440,172.43, and 285 accounts for other Departments, amounting to $36,199.75, as shown by the following table:

| | Number of accounts. | Amount. | Subsidized. | Unsubsidized. | Remarks. |
|---|---|---|---|---|---|
| Southern Pacific Co | 556 | $438,745.90 | $307,427.37 | $131,318.53 | War Department. |
| Do | 267 | 36,175.48 | 27,997.89 | 8,177.59 | Other Departments. |
| Sioux City and Pacific Co | 267 | 1,426.53 | 1,246.80 | 179.73 | War Department. |
| Do | 18 | 24.27 | 20.79 | 3.48 | Other Departments. |
| Total | 1,108 | 476,372.18 | 336,692.85 | 139,679.33 | |

### TELEGRAPH ACCOUNTS.

The accounts for telegraphic service examined by this office and transmitted for settlement were 1,279, amounting to $322,963.05.

### VESSELS OWNED BY THE QUARTERMASTER'S DEPARTMENT.

This Department has kept in service at points named, where constant use is required, twenty-six vessels, which it owns. The cost of maintaining these, including repairs, during the fiscal year 1900 was $196,662.29. This statement is exclusive of transports purchased or chartered for transportation of troops and supplies between the United States and Cuba, Porto Rico, and the Philippines.

| Name. | Class. | Tonnage. | When purchased or built. | Cost or estimated value. |
|---|---|---|---|---|
| General Hancock | Ferryboat | 171.15 | Apr. 1, 1898 | $31,165.00 |
| General French | Propeller | 153.52 | Apr. 30, 1900 | 10,000.00 |
| General McDowell | do | 160 | Nov. 17, 1886 | 56,150.00 |
| General Meigs | do | 175 | May 11, 1892 | 64,436.43 |
| Ordnance | do | 97 | Sept. 1, 1883 | 27,870.80 |
| Canby | Steam lighter | 142 | Dec. 7, 1898 | 36,000.00 |
| Poe | do | 157 | Nov. 25, 1898 | 39,500.00 |
| General Ayres | Steam tug | 61 | Mar. 23, 1900 | 6,500.00 |
| General Barry | Propeller | 56.15 | Oct. 21, 1899 | 10,000.00 |
| General Howe | do | 75 | Dec. 27, 1899 | 9,000.00 |
| General Hunt | Steam tug | 50 | July 10, 1899 | 26,397.00 |
| Captain Reilly | do | 70.30 | Nov. 14, 1879 | 17,947.46 |
| General Jeff. C. Davis | Stern-wheel steamer | 75 | May 22, 1899 | 10,500.00 |
| Eagle | Alco-vapor launch | 3.15 | July 29, 1896 | 4,950.00 |
| Capron | Steam launch | 3.15 | Apr. 19, 1899 | 3,225.50 |
| General De Russy | do | 5 | June 6, 1899 | 4,600.00 |
| Colonel Elder | do | 4.33 | Dec. 31, 1898 | 2,500.00 |
| Colonel Mendenhall | do | 3.15 | Feb. 6, 1899 | 3,225.50 |
| Hamilton | do | 37.69 | Feb. 1, 1875 | 7,800.00 |
| M. G. Krayenbuhl | do | 3.15 | Dec. 16, 1898 | 3,225.50 |
| Lillie | do | 12.87 | Mar. 13, 1899 | 1,850.00 |
| Monroe | do | 62.36 | Nov. 30, 1895 | 15,200.00 |
| Pleasonton | do | 3.15 | May 11, 1899 | 3,215.50 |
| Thayer | do | 32.36 | Oct. 8, 1874 | 7,200.00 |
| Colonel Ramsay | do | 3.15 | Sept. 11, 1899 | 3,275.00 |
| Colonel Hamilton | do | 3.15 | Feb. 13, 1900 | 3,350.00 |
| Total | | | | 409,083.69 |

| Name. | By whom employed. | Where employed. | Paid for repairs. | Running expenses. | Total expenses. |
|---|---|---|---|---|---|
| General Hancock | Quartermaster | Governors Island | $2,020.61 | $16,338.29 | $18,358.90 |
| General French | do | Fort Morgan, Ala | 8,147.00 | 51.00 | 8,198.00 |
| General McDowell | Chief quartermaster | San Francisco, Cal | 24,057.85 | 22,971.94 | 47,029.79 |
| General Meigs | Depot quartermaster | New York Harbor | 10,707.45 | 15,011.82 | 26,019 27 |
| Ordnance[1] | Quartermaster | Fort Hancock, N. J | .......... | .......... | .......... |
| Canby | Deputy quartermaster | New York Harbor | 2,453.59 | 12,983.74 | 15,437.33 |
| Poe | Quartermaster | Fort Barrancas, Fla | 1,033.21 | 5,242.22 | 6,275.43 |
| General Ayres | do | Boston, Mass | 4,979.74 | 441.05 | 5,420.79 |
| General Barry | do | Fort Slocum, N. Y | 3,873.00 | 2,320.25 | 6,193.25 |
| General Howe | do | Sullivans Island, S. C | 1,791.32 | 1,425.02 | 3,216.34 |
| General Hunt | do | Fort McHenry, Md | 263.00 | 4,281.24 | 4,544.24 |
| Captain Reilly | do | Fort Trumbull, Conn | 15,679.80 | 4,971.40 | 20,651.20 |
| General Jeff. C. Davis | do | Fort St. Michael, Alaska. | 2,327.41 | .......... | 2,327.41 |
| Eagle | do | Fort Hamilton, N. Y | 148.00 | 46.71 | 194.71 |
| Capron | do | Fort Dupont, Del | 344.99 | 1,652.50 | 1,997.49 |
| General De Russy | do | San Diego Barracks, Cal. | 468.11 | 4,205.90 | 4,674.01 |
| Colonel Elder | do | Fort Screven, Ga | 356.13 | 154.10 | 510.23 |
| Colonel Mendenhall | do | Fort Barrancas, Fla | 282.87 | 1,630.00 | 1,912.87 |
| Hamilton[2] | do | Fort Slocum, N. Y | .......... | 1,868.00 | 1,868.00 |
| M. G. Krayenbuhl | do | Fort Monroe, Va | 220.00 | 831.00 | 1,051.00 |
| Lillie | do | Alaska | .......... | .......... | .......... |
| Monroe | do | Fort Adams, R. I | 8,176.95 | 4,792.96 | 12,969.91 |
| Pleasonton | Depot quartermaster | Washington, D. C | 264.34 | 1,920.72 | 2,185.06 |
| Thayer | Quartermaster | Governors Island, N. Y | 593.50 | 4,942.21 | 5,535.71 |
| Colonel Ramsay | do | Fort Preble, Me | .......... | 15.50 | 15.50 |
| Colonel Hamilton | do | Fort Washington, Md | 51.10 | 24.75 | 75.85 |
| Total | | | 88,239.97 | 108,422.32 | 196,662.29 |

[1] Transferred for exclusive use of Ordnance Department July 1, 1899.

[2] Sold at auction to highest bidder January 4, 1900, for $625.

## ARMY TRANSPORT SERVICE.

At the beginning of the fiscal year there were in the service of the Quartermaster's Department nineteen owned transport ships and two hospital ships. The following is a list of the ships, showing their tonnage, carrying capacity, and the nature of the duties in which they were engaged:

### ATLANTIC FLEET.

| Name. | Tonnage. | Capacity. | | Remarks. |
|---|---|---|---|---|
| | | Officers. | Men. | |
| Buford | 3,732 | 61 | 1,000 | |
| Burnside | 2,194 | 27 | 273 | |
| Crook | 4,126 | 54 | 1,000 | |
| Ingalls | 1,147 | 26 | 260 | |
| Kilpatrick | 3,722 | 61 | 1,000 | |
| Logan | 5,673 | 86 | 1,648 | Refitting for the Pacific. |
| McClellan | 2,792 | 30 | 200 | |
| McPherson | 3,656 | 66 | 500 | |
| Meade | 5,641 | 60 | 1,171 | Do. |
| Sedgwick | 4,770 | 59 | 1,000 | |
| Terry | 1,338 | 81 | 400 | |
| Wright | 777 | 5 | 80 | |
| Thomas | 5,796 | 95 | 1,654 | Do. |
| Hospital ship Missouri | 2,903 | .......... | 500 | Do. |

### PACIFIC FLEET.

| Name. | Tonnage. | Officers. | Men. | Remarks. |
|---|---|---|---|---|
| Grant | 5,658 | 68 | 1,836 | |
| Hancock | 5,000 | 54 | 1,062 | |
| Sheridan | 5,673 | 93 | 1,843 | |
| Sherman | 5,780 | 69 | 1,750 | |
| Warren | 4,243 | 42 | 1,242 | |
| Hooker | 2,085 | .......... | .......... | Cable ship. |
| Hospital ship Relief | 3,095 | 20 | 252 | |

During the year five vessels were purchased or transferred from the Navy Department and added to the transport fleet, viz:

The steamship *Cassius*, having a tonnage of 3,458 tons, was purchased from the Navy Department for the sum of $160,594, payment of which was made by the transfer of that amount from the allotment of the appropriation for "National defense" to War Department to the credit of the same appropriation to the Navy Department.

This ship was fitted up as a troopship by the Navy Department at the Norfolk Navy-Yard, upon specifications prepared by the officers of this Department, at a total cost of $649,576.89, which sum includes an expenditure of $194,922.43 for auxiliary machinery, fittings, and supplies placed upon the ship.

The vessel was renamed the *Sumner*. She sailed from New York for Manila on March 31, 1900, via the Suez Canal route, with 46 officers, 649 recruits, 3 female nurses, and 7 civilian employees, a total of 705 passengers. She arrived in Manila on May 23, 1900, without casualty.

The vessel has since made the voyage to San Francisco and returned with troops and supplies to Taku, China, via Nagasaki, and is now engaged in running between Nagasaki and Taku for such service as may be required in the movement of troops serving in China.

The steamship *Columbia*, which had been under charter for the transportation of troops from San Francisco to the Philippines, after making two voyages, was offered for sale to the Government at a price considered to be exceedingly reasonable. There being a pressing need for increase of the army transport fleet on the Pacific, the vessel was purchased from her owners, The North American Mail Steamship Company, for the sum of $147,200. The registered tonnage of the vessel is 2,976 tons. Her name was changed to *Rosecrans*. The ship being already fitted to carry troops, was sent to Seattle, Wash., and was used for moving troops and supplies to Alaska.

The U. S. steamships *Badger* and *Resolute*, which had been purchased by the Navy Department for service in the war with Spain, from the appropriation "National defense," were, by order of the President, transferred to the War Department, and were fitted up for the army transport service. The S. S. *Badger* was at the Mare Island Navy-Yard, Cal., and her services being needed for transporting troops and supplies to the Department of Alaska, she was temporarily fitted for the service, at a cost of $125,000. She was renamed the *Lawton*. Her registered tonnage is 3,497 tons. She left San Francisco for Seattle on May 24, 1900, and has made two voyages to Alaska with troops and supplies. On her last voyage from Cape Nome to Seattle she brought to the United States 220 destitute citizens, and is now under orders to return to Alaska for another load of destitute citizens, being fitted to carry nearly 700 passengers. She has on board two army surgeons and a detachment of enlisted men to act as guard and assist in caring for the sick who may be on board on the return voyage.

The steamship *Resolute* was at the United States Navy Yard at Norfolk, Va., when transferred to the War Department.

Specifications for the repairs and fitting the vessel for service were prepared and a contract entered into for the work with the William Cramp & Sons' Ship and Engine Building Company, of Philadelphia, at a cost of $100,877.

This ship was renamed the *Rawlins*. Her tonnage is 2,898 tons. The work on her was completed just at the close of the fiscal year, and the ship is now in service on the Atlantic, transporting troops and supplies between New York and the West Indies.

The steamer *George W. Dickinson* was purchased at Seattle, from Mr. E. E. Caine, for the sum of $145,000. This vessel was in course of construction when purchased, and such changes as were required to fit her for service as a dispatch boat for the general commanding the Department of Alaska were made while she was being completed. These alterations consisted of additional rooms for accommodation of passengers, providing additional lavatory, heating and lighting facilities, lifeboats, refrigerating and ice plant, etc., costing in the aggregate, $13,879.75.

The vessel is very strongly built, with a view to moving safely through ice; is 1,200 tons burden, and is thoroughly suited and equipped for a dispatch boat in Alaskan waters. She is renamed the *Seward*.

The vessel has recently returned from Alaska to Seattle and is having 100 bunks installed upon her for accommodation of troops, when being transported from one station to another.

Two regular lines of transport ships were maintained during the year between the United States and the West Indies—one sailing weekly from New York to San Juan, Porto Rico, thence to Santiago, Cuba, and return to New York; the other sailing about every ten days from New York to Matanzas, Havana, and Cienfuegos, Cuba, thence returning to Havana and New York. For this service seven transports have been employed, viz, the *Buford*, *Burnside*, *Crook*, *Kilpatrick*, *McClellan*, *McPherson*, and *Sedgwick*. During the year the army transports *Crook* and *Sedgwick* were out of commission for a season, under repair and refitting.

The repair and refitting of the *Sedgwick* was done under contract by the John N. Robins Company, of New York, for the sum of $129,500.

As the work progressed, repairs and alterations additional to those provided for in the original contract were found necessary to be made and additional sums were authorized from time to time aggregating $76,268, making the total cost for refitting and repairing the ship $205,768.

The army transport *Crook* was repaired and refitted by the John N. Robins Company at a total cost of $303,217.47.

Both of these ships are capable each of transporting comfortably over 50 officers and 1,000 enlisted men.

The exigencies of the services have been such as to prevent any of the other transport ships now in service on the Atlantic to be permanently refitted, but such work has been done upon them from time to time as to keep them at all times in thorough repair and in condition for the safe and comfortable accommodation of the officers and troops being transported upon them.

In my last annual report it was stated that the army transports *Thomas*, *Logan*, and *Meade* had been designated for transfer to the Pacific, and were then in the hands of the contractors being fitted up for that service. Also that the work of refitting the hospital ship *Missouri* was completed and the ship was under orders to sail for Manila. The *Missouri* sailed from New York on September 30, 1899, via the Suez Canal, with a full complement of medical officers, nurses, and enlisted men of the Medical Corps, and arrived in Manila on November 28, 1899. The vessel made the voyage from Manila to San Francisco with sick and wounded soldiers on board, arriving at San Francisco February 13, 1900. Upon an inspection of the ship it was found that to make her available for a hospital ship on the Pacific extensive alterations and repairs at a considerable cost were necessary, and as each of the army transport ships were provided with hospital accommodations ample for the returning invalid soldiers from the Philippines, it was decided to convert the *Missouri* into a transport ship of the freight class.

This was accordingly done, and the ship renamed the *Egbert*. The vessel has been used for the transportation of supplies to Alaska during the past summer.

The work of refitting and repairing the army transports *Thomas*, *Logan*, and *Meade*, which was reported in my last annual report, was completed during the year at a total cost for each as follows:

| | |
|---|---|
| Thomas | $283,391.43 |
| Logan | 304,351.50 |
| Meade | 314,038.62 |

These transports, when completed, sailed from New York to Manila by the Suez Canal route. The *Thomas* sailed November 4, 1899, with 46 officers and 1,286 enlisted men of the Forty-seventh U. S. Volunteer Infantry, 11 officers of other commands, and 77 nurses, enlisted men of the Hospital Corps and civilian employes, a total of 1,420 passengers.

The army transport *Meade* sailed from New York on November 16, 1899, with 44 officers and 1,106 enlisted men of the Forty-third Volunteer Infantry, 4 officers of other commands, and 15 other passengers, a total of 1,169 passengers.

The army transport *Logan* sailed from New York on November 20, 1899, with 52 officers and 1,381 enlisted men of the Forty-first U. S. Volunteer Infantry, 3 officers of other commands, and 29 other passengers, a total of 1,465 passengers. These vessels all made successful voyages, and arrived at Manila without casualty.

During the fiscal year the army transport *Hancock* was refitted in San Francisco by the Union Iron Works at a cost of $456,420.52. This ship was formerly the *Arizona*, and had been in the commercial trade with China. She was purchased in 1898, to meet the demands for the transportation of troops to the Philippines, and was only temporarily fitted for that service. The vessel is now a model troopship, and is doing excellent service.

The fitting up of these vessels for service as troopships has been made in the most thorough and complete manner, upon specifications prepared with great care. Every report and criticism received regarding the fitting of the army transports *Grant*, *Sherman*, and *Sheridan*, which had preceded them to the Pacific service the previous year, were carefully considered, and every improvement suggested in them, if found to be conducive to the comfort and well-being of the troops during their long voyage, has been made upon them. It can be truthfully said that the ships which have been fitted out for transporting troops between the United States and the Philippines are in every respect better equipped for such service than the transports of any other nation.

Foreign nations have become interested in these transports, and in response to requests of representatives of England, France, Germany, Japan, and Russia, this office has furnished to them copies of the plans and specifications upon which the transports have been fitted.

Two other large army transports, viz, *Buford* and *Kilpatrick*, are now being refitted for service on the Pacific. The *Buford* is being done under contract with the Newport News Ship Building and Dry Dock Company at Newport News, Va., at a cost of $397,637; the *Kilpatrick* under contract with the John N. Robins Company, of New York, at a cost of $408,000.

In preparing the specifications for the work required on these ships, they were first taken out of commission and their machinery thoroughly opened up for inspection. This has enabled specifications to be prepared for the work required upon them with great minuteness, and the expenditure in excess of the original contract price will be comparatively small. Both of these ships are to be completed in October, and are expected to sail from New York for Manila early in November, 1900.

The army transport *Hooker*, which had been fitted up in the previous fiscal year for a cable ship for the Signal Service of the Army, and sent to the Philippines, sailing from New York on May 1, 1899, via the Suez Canal route, arrived safely at Manila on June 26, 1899. On August 11, 1899, the vessel was ordered to proceed to Hongkong, China, for coaling, and on leaving the harbor of Manila ran aground near Corregidor Island. Every effort to save the vessel proved unavailing and the ship became a total loss. The original cost of this vessel was $41,000 and the sum of $130,213 was expended in fitting her up for a cable ship.

Since the close of the fiscal year the army transport *Burnside* has been taken out of commission and fitted up in New York to transport deep-sea cable to the Philippines for the Signal Corps of the Army. The ship is provided with three tanks, in which are stored about 550 miles of cable, and is also provided with all necessary appliances for laying the cable.

The following is the list of the army transport ships in service of the Department at the end of the fiscal year, showing their tonnage, carrying capacity, and where employed, viz:

| Name. | Tonnage. | Passenger capacity. | | Cargo capacity (tons). | Remarks. |
|---|---|---|---|---|---|
| | | Officers. | Men. | | |
| Buford | 3,732 | 61 | 1,000 | 1,000 | Being fitted for Pacific. |
| Burnside | 2,194 | 27 | 273 | .......... | Being fitted for Pacific cable ship. |
| Crook | 4,126 | 54 | 1,000 | 1,500 | Atlantic fleet. |
| Egbert | 2,903 | 21 | 650 | 1,500 | Pacific fleet. |
| Grant | 5,658 | 68 | 1,836 | 2,400 | Do. |
| Hancock | 5,000 | 54 | 1,062 | 1,500 | Do. |
| Ingalls | 1,147 | 26 | 260 | 500 | Under orders for San Juan as dispatch boat. |
| Kilpatrick | 3,722 | 61 | 1,000 | 1,000 | Atlantic fleet. |
| Lawton | 3,497 | 60 | 700 | 1,600 | Pacific fleet. |
| Logan | 5,673 | 86 | 1,648 | 2,435 | Do. |
| McClellan | 2,792 | 30 | 200 | 1,800 | Atlantic fleet. |
| McPherson | 3,656 | 66 | 500 | 2,000 | Do. |
| Meade | 5,641 | 60 | 1,171 | 1,430 | Pacific fleet. |
| Rawlins | 2,898 | 59 | 500 | 1,000 | Atlantic fleet. |
| Relief | 3,095 | 20 | 252 | .......... | Hospital ship, Pacific fleet. |
| Rosecrans | 2,976 | 26 | 636 | 1,300 | Pacific fleet. |
| Sedgwick | 4,770 | 59 | 1,000 | 1,025 | Atlantic fleet. |
| Seward | 1,200 | 15 | 200 | 600 | Dispatch boat in Alaska. |
| Sheridan | 5,673 | 93 | 1,843 | 2,400 | Pacific fleet. |
| Sherman | 5,780 | 69 | 1,750 | 2,400 | Do. |
| Sumner | 3,458 | 57 | 780 | 500 | Do. |
| Terry | 1,338 | 81 | 400 | .......... | Out of commission in New York. |
| Thomas | 5,796 | 95 | 1,654 | 2,204 | Pacific fleet. |
| Warren | 4,243 | 42 | 1,242 | 2,000 | Do. |
| Wright | 777 | 5 | 80 | 300 | Being repaired for dispatch boat. |

### THE ARMY TRANSPORT SERVICE IN CUBA AND PORTO RICO.

No important changes in the number of troops serving on the islands of Cuba and Porto Rico were made during the fiscal year.

There have been transported from the United States to Cuba on the army transport ships 195 officers, 3,297 enlisted men, and 960 civilian passengers, a total of 4,452 persons; and from Cuba to the United States 291 officers, 5,416 enlisted men, and 2,526 civilians, a total of 8,233 persons; making a total movement between the United States and Cuba of 12,685 passengers.

There were transported from the United States to Cuba 23 animals, 56,128 tons of freight, and 871,936 packages and pieces of baggage; and from Cuba to the United States 1,881 animals, 3,943 tons of freight, and 44,192 packages and pieces of baggage.

There were also brought from Cuba on the transport ships 421 remains of deceased officers, soldiers, sailors, and civilian employees for interment in the United States.

The movements by army transports from the United States to Porto Rico has been 90 officers, 941 enlisted men, and 699 civilians, a total of 1,730 passengers; and from Porto Rico to the United States 99 officers, 995 enlisted men, and 983 civilians, a total of 2,077 passengers. The total movement between the United States and Porto Rico has been 3,807 passengers.

There were transported from the United States to Porto Rico 6 animals, 32,307 tons of freight, and 505,111 packages and pieces of baggage; and from Porto Rico to the United States 498 animals, 706 tons of freight, and 8,785 packages and pieces of baggage. The remains of 115 officers, soldiers, and civilian employees who have died on the island were also brought to the United States for interment.

In August, 1899, the island of Porto Rico was swept by a hurricane which created great destruction and loss among the people of the island. The citizens of this country promptly contributed large quantities of relief supplies, consisting of food, clothing, and building materials. A committee of citizens was appointed by the Secretary of War, of which Hon. C. N. Bliss was chairman, to receive and forward such relief supplies as were offered. To this committee the Quartermaster's Department tendered the facilities of the army transport service for the delivery of supplies to San Juan, Porto Rico, whence distribution was made to the destitute.

There were shipped on the army transports from New York to Porto Rico 1,170 tons of relief supplies donated by citizens, and 3,377 tons of subsistence supplies shipped by the Subsistence Department of the Army for the relief of the storm sufferers.

At the ports in Cuba and Porto Rico there have been mintained aa fleet of lighters, tugs, and sloops for the handling of freight and for the distribution of supplies to the garrisons on the islands. The following is a list of these vessels, showing their class and where employed, viz:

| Name. | Class. | Where employed. |
|---|---|---|
| Ord | Tug | At Manzanillo. |
| Reno | do | At Havana. |
| Reynolds | do | Do. |
| Richardson | do | At Matanzas. |
| Slocum | do | At San Juan, P. R. |
| Gibbon | do | At Nuevitas. |
| Weitzel | do | At Santiago. |
| Baker | Steam lighter | At Havana. |
| Poe | do | Do. |
| Williams | do | At Manzanillo. |
| Kearney | do | At Havana. |
| Esparanza | Sloop | At Gibara. |
| Miguel | do | Do. |

Of the above-mentioned vessels the steam lighter *Poe* was withdrawn from the service in Cuba and is now on duty as a harbor boat at Fort Barrancas, Fla.; the tugs *Reno*, *Reynolds*, and *Weitzel* have been withdrawn from service in Cuba, and are now in New York. These three tugs will probably be made available for service in the harbor of New York and dispense with the service of those which are now hired for the docking and handling of the transport ships.

The tug *Slocum* was withdrawn from the service at San Juan, P. R., and was sent to New York, where she was put in thorough repair, and sent to San Francisco for service in handling the army transport ships and lightering passengers and supplies. The *Slocum* is a large and powerful tug, and all efforts to secure such a one on the Pacific coast having failed, it was determined to send her there for service. The vessel left New New York on July 12, 1900, via the Straits of Magellan. Heavy storms were encountered, detaining the vessel en route. She arrived at San Francisco on October 6, 1900, making the entire voyage in eighty-six days.

Three small transport ships were in service in Cuba during the year, viz: The *Ingalls* at Havana and the *Wright* at Santiago as dispatch boats for the commanding generals at those places, and the *Terry* in service of the Medical Department for a short period.

The reduction of the garrisons of the island rendered unnecessary the service of these vessels, and they have been withdrawn from there, the *Terry* and *Wright* being sent to New York and put out of commission, and the *Ingalls* sent to San Juan for service as a dispatch boat for the commanding general, Department of Porto Rico. It is believed that the *Ingalls* would be a useful vessel for the interisland service in the Philippines, and the subject of sending her there and sending the *Wright* to San Juan in her place is now under consideration.

During the year the War Department purchased from the Navy Department two small steamers, the *Kanawha* and *Viking*, for the customs service in Cuba, the former at a cost of $50,000 and the latter $30,000, payment of which was made by the transfer of the amounts from the appropriation for "National defense."

The vessels were fitted up and sent to Cuba, where after trial they were found unsuited for the customs service, and they have been transferred to the army transport service. The *Kanawha* has been assigned to service at Havana as a dispatch boat for the commanding general, Division of Cuba. The *Viking* is under orders to be sent to the States for future disposition of her services where needed.

### CUBAN SCHOOL-TEACHERS.

Upon invitation of the authorities of the Harvard University, the native school-teachers in Cuba were given several weeks' instruction during the past summer at that institution. These teachers to the number of 1,273 were transported on the army transports from the several ports in Cuba to Boston, leaving Cuba during the last days of June, 1900, and arriving in Boston early in July. For this service five army transport ships, viz, *Crook*, *McClellan*, *Burnside*, *McPherson*, and *Sedgwick*, were specially fitted up for the accommodation of the gentlemen and ladies of the party. The teachers were returned from Boston to Cuba by four army transports—*Crook*, *McPherson*, *Sedgwick*, and *Rawlins*—in August, 1900, sailing via New York and Philadelphia, in which cities they were entertained.

### THE ARMY TRANSPORT SERVICE ON THE PACIFIC.

At the beginning of the fiscal year preparations were being made for the transportation of an army to the Philippines and the return from there of the volunteer troops whose term of service had expired. For this service there were on the Pacific five owned transport ships, the *Grant*, *Sherman*, *Sheridan*, *Hancock*, and *Warren*, with a combined carrying capacity of 326 officers and 7,733 enlisted men. There were at the time under charter the following-named vessels, fitted for carrying troops, viz:

| Name of vessel. | Carrying capacity. | | Name of vessel. | Carrying capacity. | |
|---|---|---|---|---|---|
| | Officers. | Men. | | Officers. | Men. |
| Newport | 32 | 540 | Senator | 49 | 1,000 |
| Ohio | 30 | 956 | Valencia | 26 | 635 |
| Indiana | 43 | 984 | Zealandia | 32 | 700 |
| Pennsylvania | 50 | 1,280 | | | |
| Morgan City | 22 | 709 | Total | 284 | 6,804 |

For this service the following additional ships were chartered and fitted up for the accommodation of troops:

| Name of vessel. | Carrying capacity. | | Name of vessel. | Carrying capacity. | |
|---|---|---|---|---|---|
| | Officers. | Men. | | Officers. | Men. |
| Sikh | 22 | 641 | Glenogle | 30 | 718 |
| Tartar | 45 | 1,176 | Charles Nelson | 22 | 210 |
| City of Para | 46 | 989 | Manauense | 15 | 381 |
| St. Paul | 42 | 800 | Olympia | 19 | 604 |
| City of Sydney | 25 | 710 | City of Peking | 39 | 928 |
| City of Puebla | 25 | 856 | Benmohr | 21 | 550 |
| Columbia | 26 | 636 | Pathan | 23 | 705 |
| Belgian King | 27 | 780 | Duke of Fife | 40 | 900 |
| Tacoma | 27 | 735 | Dalny Vostock | 26 | 800 |
| George W. Elder | 23 | 496 | | | |
| City of Rio de Janeiro | 28 | 718 | Total | 571 | 14,328 |

Upon these ships there were transported from San Francisco to the Philippines 1,464 officers and 34,664 enlisted men; from Seattle, Wash., 25 officers and 981 enlisted men, and from Portland, Oreg., 108 officers and 2,999 enlisted men, a total of 40,241 troops, in addition to which there were 1,870 nurses, civilian employees, and other persons, making a total of 42,111 passengers transported from the Pacific coast. This number, however, includes the cavalry troops who were detailed to accompany the animals of their regiments on animal transports.

The steamship *Morgan City*, which sailed from San Francisco on August 10, 1899, with 8 officers, 675 recruits, 25 enlisted men, nurses, and postal clerks, on the morning of September 2, 1899, while making passage through the inland Sea of Japan, in charge of a local pilot, struck a rock. Upon being floated by the rise of the tide, it was found the vessel was leaking badly, and she was accordingly beached and became a total wreck.

The officers and men were all safely landed on the shore of the small island of Innoshima. The officers in command of the troops visited the mainland and communicated by telegraph to the United States minister at Tokyo the conditions existing, who promptly took measures for the relief of the stranded troops. A warship of the Japanese Government was sent to offer any needed assistance, and through the courtesy of the Japanese Government abundance of food supplies were purchased and sent to the troops. These stranded troops were subsequently taken to Nagasaki, where they were embarked on the chartered transport *Ohio*, which was dispatched from Manila for the purpose, and arrived in Manila on September 19, 1899.

With this exception no serious accident has occurred on the troopships, and the large body of troops have been transported from the United States to the Philippines without casualty.

There were transported from the Philippines to the United States during the fiscal year 944 officers, 12,593 enlisted men, and 7,117 other persons, a total movement of 20,654 passengers. These include the return to the United States for muster out of service of the following volunteer troops, viz, Second Oregon, Tenth Pennsylvania, First Nebraska, Utah Artillery, First Colorado, First California, California Artillery, First Wyoming, Wyoming Artillery, First North Dakota, First Idaho, First South Dakota, Thirteenth Minnesota, First Montana, Twentieth Kansas, First Washington, Fifty-first Iowa, First Tennessee, Nevada Cavalry, and Volunteer Signal Corps.

The army transports *Grant*, *Sherman*, and *Sheridan*, after over a year's service between San Francisco and Manila, were found to require renewal of their old decks which were on them when purchased, and work is being done upon them, one at a time, as they can be spared from the service. In May, 1900, contract was entered into with the Fulton Engineering and Shipbuilding Works of San Francisco to put new decks on the army transport *Sheridan*, and make such other repairs to the ship as required, for the sum of $285,475. This work is now nearly completed, and another one of the ships will be redecked and repaired as her services can be spared for the purpose.

### TRANSPORTATION OF ANIMALS AND SUPPLIES TO THE PHILIPPINES.

During the fiscal year three large troopships were transferred from the Atlantic to the Pacific fleet, viz, *Thomas*, *Meade*, and *Logan*, which increased the number in the latter fleet to eight. With these transports a semimonthly sailing between San Francisco and Manila was arranged, so that a transport would leave each port on the 1st and 16th of each month. In the event of the sailing date occurring on Sunday the ship leaves San Francisco on the preceding day.

In addition to the accommodation for troops and their baggage, these ships have a large freight-carrying capacity and are used in transporting a large amount of quartermaster, subsistence, medical, and other supplies for the army in the Philippines, but the increase in the military force serving there largely augmented the demand for animals for the cavalry and artillery, means of transportation, and supplies for the army, making additional freight and animal ships necessary.

For the transportation of animals special care has been exercised in selecting suitable ships. Transports of large carrying capacity are necessary, as an ample supply of forage must go on each ship to sustain the animals en route.

For the safety and comfort of the animals, stalls are constructed on the ships of smoothly planed lumber, and material placed on board for padding the stalls in case the animals become chafed. Extra stalls are provided to enable the animals to be changed from one to another, and space left on the decks where the animals may be exercised when the sea is smooth. Slings made of heavy canvas of sufficient strength to support the weight of the animals are also provided, if their use should become necessary. Especial attention has been given to the subject of ventilation. Electric plants have been installed for lighting the ships and running fans for forcing fresh air between decks occupied by the animals and for exhausting the foul air in them, which are supplemented by wind sails attached to the hatches and ports. A condensing apparatus is placed on the ships to provide an ample supply of fresh water. Upon each of the ships a hospital is provided, where the sick animals may lie down and be treated and cared for. A veterinary surgeon and a corps of experienced caretakers for the animals accompany each ship. In a word, everything is provided on these ships that will be conducive to the safety and comfort of the animals during their long voyage.

During the fiscal year fifteen ships and one sailing vessel have been chartered for the transportation of animals and freight.

A corral has been established at Honolulu where the animals are landed for rest and recuperation before resuming the voyage to Manila.

In December, 1899, the bubonic plague broke out at Honolulu and the touching of the army transport ships at that port was prohibited. The animals were then landed at Hilo, another island of the Hawaiian group, where they were rested before continuing the voyage to the Philippines.

Arrangements were also made through the courtesy of the Japanese Government to permit animals en route to the Philippines to be landed at Kobe for rest and recuperation, and a large number have been landed at that port instead of stopping at Honolulu or Hilo.

There have been shipped from the Pacific coast during the fiscal year 10,315 animals. This service, as a rule, has been most satisfactorily performed, the animals arriving at the end of their voyage in good condition and the losses en route not greatly if at all exceeding the percentage of loss among similar numbers of animals when herded on land, except in two shiploads, which became damaged by encountering severe storms, viz, the steamship *Siam*, which sailed from San Francisco on August 19, 1899, with 47 horses and 326 mules on board, ran into a typhoon off the coast of the island of Luzon, and arrived in the harbor of Manila with only 16 mules alive and fit to land; and the steamship *Victoria*, which left Seattle on November 23, 1899, with 404 animals on board, sailed via the northern route, encountered a severe storm and was compelled to return to Seattle four days later. Eighty-seven of the animals on board were either killed or subsequently died of their injuries, and the remainder were too badly maimed and bruised to permit of their reshipment at that time. The *Victoria* was then sent to San Francisco, from whence she took a load of animals to Manila via Honolulu and the southern route.

For the large number of animals in the Philippines it is necessary to provide large quantities of forage. Hay and grain are purchased largely in the markets of the North Pacific coast, and shipped thence direct to Manila. It has been established that in case of shortage of American forage, the native grass can be substituted during the emergency with fair results. This native forage, however, can only be obtained in a very limited quantity.

Upon the owned and chartered transports there have been shipped to the Philippines from the Pacific coast 12,362 tons of hay, 11,211 tons of oats, 307 tons of bran, and 15 tons of barley, and upon ships hired at tonnage rates there have been shipped 2,878 tons of hay, 1,357 tons of oats, and 39 tons of bran. From New York there was shipped to Manila at tonnage rates 1,761 tons of forage, making a total shipment during the fiscal year of 29,930 tons of forage.

There have also been transported from the Pacific coast ports to the Philippines during the fiscal year 146,071 tons of army supplies, 1,093,812 packages, 336,247 pounds of mails, and $5,844,500 in money. There were also transported by ships hired by tonnage rates 15,089 tons of military supplies.

The following is a statement of the ships employed under charter during the fiscal year, showing from whom chartered, tonnage, class, date of charter, rate of charter, date of discharge, etc., viz:

| Name of vessel. | Name of owner. | Tonnage. | Class. | Date of charter. | Rate of charter. | Charter price reduced to following rate per day. | Remarks. |
|---|---|---|---|---|---|---|---|
| Ohio | Empire Transportation Co | 2,072 | Troop ship | May 27, 1898 | $25,000 per month |  | Discharged Feb. 15, 1900. |
| Senator | Pacific Coast Steamship Co | 2,409 | do | June 8, 1898 | $1,000 per day |  | Discharged Aug. 3, 1899. |
| Do | Rechartered |  |  | Aug. 3, 1899 | $750 per day |  | Discharged Feb. 6, 1900. |
| Indiana | Empire Transportation Co | 2,484 | Troop ship | June 8, 1898 | $25,000 per month | Feb. 11, 1900, to $600 | Still in service. |
| Newport | Pacific Mail Steamship Co | 3,000 | do | June 20, 1898 | $1,000 per day |  | Discharged Jan. 1, 1900. |
| Pennsylvania | Empire Transportation Co | 3,166 | do | July 7, 1898 | $25,000 per month | Jan. 17, 1900, to $600 | Still in service. |
| Tacoma | Alaska Packers' Association | 1,738 | Sailing ship (animal). | July 11, 1898 | $200 per day | July 1, 1899, to $150 | Discharged Jan. 27, 1900. |
| Morgan City | John Barneson and Richard Chilcott, agents. | 2,295 | Troop ship | Jan. 5, 1899 | $600 per day |  | Sunk in Japan Sea Sept. 2, 1899. |
| Centennial | do | 2,075 | Animal ship | Jan. 27, 1899 | $275 per day |  | Discharged July 1, 1899. |
| Do | Rechartered from Chas. Nelson |  |  | July 1, 1899 | do |  | Discharged Jan. 9, 1900. |
| Conemaugh | Empire Transportation Co | 2,328 | Animal ship | Feb. 14, 1899 | $650 per day | Jan. 22, 1900, to $600 | Discharged May 19, 1900. |
| Do | Rechartered |  |  | June 14, 1900 | $400 per day |  | Still in service. |
| Leelanaw | Saginaw Steel Steamship Co | 1,924 | Animal ship | Apr. 14, 1899 | $600 per day | Feb. 1, 1900, to $550<br>June 4, 1900, to $475 | Do. |
| Wyefield | H. J. Hart | 5,200 | do | June 12, 1899 | $650 per day | May 1, 1900, to $500 | Do. |
| Valencia | Pacific Steam Whaling Co | 1,198 | Troop ship | June 17, 1899 | $400 per day |  | Discharged Dec. 27, 1899. |
| Zealandia | Oceanic Steamship Co | 2,489 | do | June 14, 1899 | $18,000 per month |  | Discharged Dec. 13, 1899. |
| Tartar | H. J. Hart | 4,425 | do | July 4, 1899 | $1,000 per day | Jan. 3, 1900, to $850 | Discharged Apr. 23, 1900. |
| City of Para | Pacific Mail Steamship Co | 3,532 | do | July 6, 1899 | $800 per day |  | Discharged Dec. 15, 1899. |
| Garonne | Frank Waterhouse | 3,901 | Animal ship | July 21, 1899 | $700 per day |  | Discharged Apr. 4, 1900. |
| Athenian | Canadian Pacific Rwy. Co | 3,882 | do | July 22, 1899 | $800 per day |  | Discharged May 2, 1900. |
| Do | Rechartered |  |  | May 14, 1900 | $600 per day |  | Still in service. |
| Port Albert | Frank Waterhouse | 3,514 | Animal ship | July 27, 1899 | do | Aug. 1, 1900, to $525 | Do. |
| Siam | Macondray & Co | 3,160 | do | Aug. 1, 1899 | do | Feb. 12, 1900, to $500 | Discharged June 16, 1900. |
| St. Paul | Alaska Commercial Co | 2,440 | Troop ship | Aug. 3, 1899 | $700 per day |  | Discharged Feb. 16, 1900. |
| Victoria | North American Mail Steamship Co. | 3,502 | Animal ship | do | $800 per day |  | Discharged Mar. 29, 1900. |
| City of Sydney | Pacific Mail Steamship Co | 3,000 | Troop ship | Aug. 8, 1899 | $750 per day |  | Discharged Jan. 30, 1900. |
| City of Puebla | Pacific Coast Steamship Co | 2,623 | do | Aug. 18, 1899 | $600 per day |  | Discharged Feb. 3, 1900. |
| Columbia | North American Mail Steamship Co. | 2,976 | do | Aug. 25, 1899 | $750 per day |  | Discharged Feb. 16, 1900. |
| Aztec | Pacific Mail Steamship Co | 3,508 | Animal ship | Aug. 28, 1899 | $800 per day |  | Discharged May 4, 1900. |
| Sikh | John Rosenfield's Sons | 3,606 | Troop ship | do | $600 per day |  | Discharged Dec. 23, 1899. |
| Belgian King | M. J. Brandenstein & Co | 3,379 | do | Sept. 1, 1899 | $700 per day |  | Discharged Nov. 25, 1899. |
| Tacoma | Fred Dodwell | 2,811 | do | Sept. 4, 1899 | $650 per day |  | Discharged Dec. 5, 1899. |
| George W. Elder | Goodall, Perkins & Co | 1,709 | do | do | $550 per day |  | Discharged Nov. 25, 1899. |
| City of Rio de Janeiro. | Pacific Mail Steamship Co | 3,548 | do | Sept. 12, 1899 | $875 per day |  | Discharged Dec. 23, 1899. |
| Glenogle | Fred Dodwell | 3,750 | do | Sept. 18, 1899 | $800 per day |  | Discharged Dec. 8, 1899. |
| Charles Nelson | Charles Nelson | 1,575 | do | Sept. 23, 1899 | $300 per day |  | Discharged Dec. 19, 1899. |
| Manauense | Harry J. Hart | 1,672 | do | Sept. 27, 1899 | $500 per day |  | Discharged Feb. 6, 1900. |
| Lennox | North Pacific Steamship Co | 3,677 | Animal ship | Sept. 29, 1899 | $700 per day | Feb. 20, 1900, to $650<br>June 22, 1900, to $575 | Still in service. |
| Victoria | J. J. Moore & Co | 2,574 | Freight ship | Oct. 5, 1899 | $500 per day |  | Discharged May 22, 1900. |
| Olympia | North American Mail Steamship Co. | 2,608 | Troop ship | Oct. 9, 1899 | $800 per day |  | Discharged Jan. 18, 1900. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| City of Peking | Pacific Mail Steamship Co | 5,079 | Troop ship | Oct. 13, 1899 | $1,000 per day | | Discharged Jan. 31, 1900. |
| Westminster | Harry J. Hart | 3,859 | Animal ship | Oct. 16, 1899 | $650 per day | Apr. 20, 1900, to $450 | Still in service. |
| Benmohr | Macondray & Co | 3,000 | Troop ship | do | $700 per day | | Discharged Feb. 12, 1900. |
| Port Stephens | Frank Waterhouse | 3,554 | Animal ship | Oct. 21, 1899 | $750 per day | Mar. 9, 1900, to $600 | Still in service. |
| Pathan | Macondray & Co | 2,709 | Troop ship | Oct. 23, 1899 | $700 per day | | Discharged Feb. 10, 1900. |
| Duke of Fife | John Rosenfeld's Sons | 3,821 | do | Nov. 1, 1899 | $900 per day | | Discharged Mar. 23, 1900. |
| Flintshire | G. W. McNear | 3,815 | Animal ship | Nov. 3, 1899 | $700 per day | May 1, 1900, to $500 | Still in service. |
| Dalny Vostock | John Rosenfeld's Sons | 3,688 | Troop ship | Nov. 6, 1899 | $600 per day | | Discharged Feb. 21, 1900. |

Of the above-mentioned chartered steamships the following were in service at the close of the fiscal year, viz:

| Name. | Class. | Name. | Class. |
|---|---|---|---|
| Indiana | Troopship. | Port Albert | Animal ship. |
| Pennsylvania | Do. | Lennox | Do. |
| Conemaugh | Animal ship. | Port Stephens | Do. |
| Leelanaw | Do. | Westminster | Troopship. |
| Wyefield | Do. | Flintshire | Animal ship. |
| Athenian | Freight ship. | | |

### MOVEMENTS TO AND FROM HONOLULU.

There have been transported from the United States to Honolulu 5 officers, 62 enlisted men, and 81 other passengers, and 2,930 tons of stores. From Honolulu there have been transported to the United States 1 officer, 8 enlisted men, and 46 other passengers, and 20 tons of stores, and to Manila 5 officers, 214 enlisted men, and 9 other passengers, and 1,190 tons of stores, a total movement of 431 passengers and 4,140 tons of freight.

### DEPARTMENT OF ALASKA.

During the year the Department of Alaska was established and a military command sent to St. Michael and Nome for garrison duty. The Quartermaster's Department was called upon to provide the means of transportation for the troops and their supplies, which included large quantities of building materials and military supplies of all kinds. For this service the army transports *Egbert*, *Rosecrans*, and *Lawton* were detailed, and the steamship *Athenian* was chartered. The steamer *Seward* was also purchased and fitted up for a dispatch boat for the commanding general of the department. Upon these ships there were transported from Seattle, Wash., to St. Michael and Nome 26 officers, 565 enlisted men, and 291 civilian employees and other persons, a total of 882 passengers. These ships also carried 86 animals, 2,310 tons of military stores, and 3,681,000 feet of lumber.

Since the close of the fiscal year a steamship has been chartered and dispatched to Alaska with a supply of coal for the use of the command during the coming winter.

### THE ARMY TRANSPORT SERVICE IN THE PHILIPPINES.

Upon the military occupation of Manila in 1898, the supply of the army serving there was confined to the delivery of military supplies in the harbor of Manila by the transport ships. These supplies had to be lightered from the ships to the depot, a distance of 2 or more miles, and for this purpose the native cascoes and lorches had to be depended upon. These proved to be entirely inadequate to perform the service.

Upon recommendation of the chief quartermaster at Manila authority was granted in August, 1899, to purchase steam lighters, tugs, and launches to meet the needs for lighterage in that harbor. The report of the chief quartermaster at Manila shows that a daily average of over 1,000,000 pounds of stores can now be unloaded from the ships and delivered to the storehouses.

The distribution of the army serving in the Philippines to the various important islands of the archipelago rendered necessary the detail of ships for the transportation of troops and supplies from Manila to those islands. For this purpose the chartered steamships *Pennsylvania* and *Indiana* were ordered, on their arrival in Manila from San Francisco in February and March, 1900, to remain in Philippine waters under the orders of the chief quartermaster at Manila, for local service around the islands. These ships had previously been fitted for carrying troops and were well equipped for the purpose, and in addition could carry large quantities of stores.

It is designed to replace these ships by two other ships which are owned by the Department as soon as they can be fitted up and made suitable for the service.

The work performed by the army transport service in the Philippines during the fiscal year as reported, has been the movement from Manila to China of 37 officers, 1,271 enlisted men, and 37 other persons, and between Manila and other ports of the Archipelago of 693 officers, 15,023 enlisted men, 2,122 other persons, 588 animals, 8,150 tons of stores, a total movement of 19,178 passengers, 588 animals, and 8,150 tons of freight.

The coaling of army transport ships in the harbor of Manila has been a perplexing question, the lightering of coal to the ships out in the harbor and the transfer from the lighters to the ship bunkers by hand being a slow and costly process.

A vessel was purchased in Manila and anchored in the bay for use as a collier upon which hoisting apparatus with a capacity for delivering to the transport ships 600 tons of coal per day was installed.

Additional colliers being needed, efforts were made to secure suitable vessels in China and Japan without avail, and the sailing ship *St. Mark*, with a capacity for 2,700 tons of coal, was purchased during the fiscal year in New York, and fitted up and sailed from Norfolk, Va., for Manila via Cape Horn, with a load of coal on board, on July 11, 1900. The price paid for this ship was $50,000.

Another sailing ship, the *Cyrus Wakefield*, has been purchased in San Francisco since the close of the fiscal year and dispatched to Nanaimo for a load of coal, whence she will sail for Manila.

These ships on arrival in Manila will be dismantled, provided with hoisting apparatus, and anchored in the harbor for coaling purposes. They will be known as colliers Nos. 1, 2, and 3.

At certain seasons typhoons are of frequent occurrence in Manila harbor, during which it has been impossible to deliver coal to the ships. With these colliers it will be possible to coal the ships during a storm, the collier being towed under the lee of a point of land at Cavite, protected from the violence of the storm, where coal may be transferred to the ships with safety.

## REPATRIATION OF THE SPANISH PRISONERS IN THE PHILIPPINES.

The transportation of the Spanish prisoners from the Philippine Islands to Spain under the terms of the treaty of peace with the Spanish nation has continued under the contract with Messrs. J. M. Ceballos & Co. as the prisoners have been released from the hands of the Filipinos and brought into Manila, from whence they are shipped to Spain.

The bills presented for the services rendered under the contract show that there have been transported from the Philippine Islands to Spain 1,589 officers, 13,477 enlisted men, and 2,308 other persons, a total of 17,374 prisoners.

Settlement of these bills have been made in part by the payment of the sum of $1,304,647.50.

### REGULATIONS FOR THE ARMY TRANSPORT SERVICE.

The regulations for the government of the army transport service, approved by the Secretary of War on November 16, 1898, were found, upon actual application in the service, to require revision in many particulars, various amendments having been submitted to the Department by those whose duties were governed by them.

By Special Orders No. 293, Headquarters of the Army, Adjutant-General's Office, dated December 18, 1899, a board of officers, consisting of Col. Charles A. Woodruff, Subsistence Department, Maj. Henry S. Kilbourn, Medical Department, and Maj. Francis B. Jones, Quartermaster's Department, was convened to consider the proposed changes in and additions to the regulations.

The board submitted report of the changes and additions which they recommended be made, which, after careful revision, was approved by the Secretary of War on May 5, 1900, and the revised regulations have been promulgated for the government of the army transport service.

The fiscal year has been one of great activity for the army transport service, as shown by a summary of the work performed as herein reported.

A recapitulation of the reports received show the number of passengers, animals, and tons of freight moved during the year have been as follows:

| | Passengers. |
|---|---|
| From the United States to Cuba | 4,362 |
| From Cuba to the United States | 8,233 |
| From United States to Porto Rico | 1,730 |
| From Porto Rico to United States | 2,077 |
| From United States to the Philippines | 46,870 |
| From the Philippines to the United States | 20,654 |
| From United States to Honolulu | 148 |
| From Honolulu to United States and Philippines | 283 |
| From United States to Alaska | 882 |
| From Manila to China | 1,345 |
| To and from ports in the Philippine Islands | 17,838 |
| Total | 104,422 |

There were also brought to this country for reinterment from the islands of Cuba, Porto Rico, and the Philippines the remains of 1,761 officers, enlisted men, and civilian employees who had been killed or died of wounds or disease.

The following number of animals were transported:

| | |
|---|---|
| From the United States to Cuba | 23 |
| From Cuba to the United States | 1,881 |
| From United States to Porto Rico | 6 |
| From Porto Rico to the United States | 498 |
| From United States to the Philippines | 10,315 |
| From United States to Alaska | 86 |
| From Manila to other ports in Philippine Islands | 588 |
| Total | 13,397 |

The shipment of stores, as shown by the reports, have been on the—

| | Tons. |
|---|---|
| Atlantic | 97,631 |
| Pacific | 204,902 |
| In the Philippine Islands | 8,150 |
| Total freight moved | 310,683 |

The reports of expenditures at the principal ports of operations show that during the year there have been expended—

| | |
|---|---|
| For the purchase of vessels of all classes | $559,150.00 |
| For charter of ships | 6,974,004.65 |
| For the fitting up and repair of transport ships | 5,800,312.18 |
| A total expenditure for these objects of | 13,333,466.83 |

During the year, under instructions of the Secretary of War, I made a voyage to the Philippines, leaving New York on the army transport *Logan* on November 20, 1899, via the Suez Canal route, and arrived in Manila on January 3, 1900. I returned to the United States on a commercial steamship to San Francisco, visiting en route Hongkong and Shanghai, China, and Nagasaki, Kobe, and Yokohama, Japan. At Honolulu, by reason of the plague then prevailing, I did not land. Arriving in San Francisco on March 14, 1900, I subsequently visited Seattle and Tacoma, Wash., and arrived in this city on March 30, 1900.

This tour was made for the purpose of ascertaining the conditions prevailing in the army transport service in the Philippines and on the Pacific coast, and under special instructions of the Quartermaster-General I also inspected the conditions of the quartermaster's department in the Philippines, as regards means of land and water transportation, barracks and quarters, storehouses, clothing, forage, and other quartermaster's supplies, and also examined into the facilities at the several ports visited in China and Japan for docking and repairing vessels, coaling, and otherwise providing for the transport ships from time to time as required when calling at those ports. The result of my observations and inspection was fully set forth in a special report submitted to the Quartermaster-General upon my return to this office.

It is proper, however, that I state that my observations enabled me to report that at each of the places where the Quartermaster's Department is engaged in the purchase, transportation, and distribution of army supplies, the officers of the department responsible for these important duties are fully alive to the best interests of the service and are performing their duties with a zeal, energy, and fidelity highly commendable.

The voyage on the army transport *Logan* enabled me to personally observe the efficiency of the ship, which had just been fitted up for the accommodation of a large body of troops for a long voyage across the seas.

I am pleased to report that the equipment of the *Logan* was found to be in every respect complete for the accommodation and comfort of the officers and men on board. There were 1,492 passengers on the ship, which made the voyage from New York to Manila, a distance of 11,311 miles, in forty-five days. The account kept by the transport quartermaster of the expenses incurred for running the ship during the voyage, including the cost for fuel, wages, and subsistence of the crew, Suez Canal tolls, pilotage, etc., showed that the average cost per capita for transportation of each passenger on board from New York to Manila was $26.87. This proves beyond a doubt the economy in maintaining the army transport ships for the transportation of troops on long voyages.

During my absence the duties of chief of the transportation division of this office were efficiently performed by Maj. J. B. Bellinger, quartermaster of the Army, whose past experience in connection with the work of the army transport service well qualified him for the successful conduct of the business.

The year closed with active preparations being made to send troops and supplies into China to meet the needs of the Government in relieving the beleaguered representatives of the Government in Pekin and for protection of the citizens of the United States resident in China. No movements were, however, made from the United States until after the beginning of the present fiscal year.

It is gratifying to be able to report that the large work performed during the year has been accomplished without the sacrifice of a single human life by reason of any defect in the conduct of the transport service, and at a minimum of cost to the Treasury of the United States.

Respectfully submitted.

CHAS. BIRD,
*Quartermaster, United States Army,*
*Chief of Transportation Division.*

The QUARTERMASTER-GENERAL OF THE ARMY.

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WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
*Washington, August 22, 1900.*

GENERAL: I have the honor to submit my report of operations of the business coming under my charge in your office for the fiscal year ended June 30, 1900.

In the finance branch are considered all matters relating to the procurement and distribution of funds, the compilation and preparation for Congress of the annual estimates of appropriations required for the service of the Quartermaster's Department and for the Quartermaster-General's Office, the examination of estimates of funds received from disbursing officers, the action upon settlements made at the Treasury Department, etc.

Attention is respectfully invited to the accompanying statements, showing in detail the balances on hand at the commencement of the fiscal year, the amounts credited from the appropriations, sales, etc., the remittances to officers, amounts paid out on account of settlements, the amounts carried to the surplus fund, etc.

### *Financial statement for fiscal year ending June 30, 1900.*

[From the balance books in which all debits and credits are recorded.]

| Appropriations. | Balance in Treasury undrawn July 1, 1899. | Appropriated. |  | Placed to credit of appropriations during the year, being the proceeds of sales to officers, etc. | Placed to credit of appropriations during the year by Treasury transfer warrants. | Total to be accounted for. | Remitted to disbursing officers. | Paid on settlements made at Treasury of claims and accounts. | Amounts charged against appropriations by Treasury transfer warrants. | Amounts carried to surplus fund, act June 20, 1874. | Balance in Treasury undrawn June 30, 1900, and available for outstanding obligations. | Total accounted for. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Amount. | Date of act. |  |  |  |  |  |  |  |  |  |
| *1897 and prior years.* |  |  |  |  |  |  |  |  |  |  |  |  |
| Regular supplies |  |  |  | $748.85 |  | $748.85 |  |  |  | $748.85 |  | $748.85 |
| Incidental expenses |  |  |  | 394.52 |  | 394.52 |  |  |  | 394.52 |  | 394.52 |
| Barracks and quarters |  |  |  | 16.73 |  | 16.73 |  |  |  | 16.73 |  | 16.73 |
| Transportation of the Army and its supplies |  |  |  | 4,231.64 |  | 4,231.64 |  |  |  | 4,231.64 |  | 4,231.64 |
| Clothing and camp and garrison equippage |  |  |  | 504.97 |  | 504.97 |  |  |  | 504.97 |  | 504.97 |
| National cemeteries |  |  |  | 7.58 |  | 7.58 |  |  |  | 7.58 |  | 7.58 |
| Headstones for graves of soldiers |  |  |  | 1.64 |  | 1.64 |  |  |  | 1.64 |  | 1.64 |
| Burial of indigent soldiers |  |  |  | 92.00 |  | 92.00 |  |  |  | 92.00 |  | 92.00 |
| Total |  |  |  | 5,997.93 |  | 5,997.93 |  |  |  | 5,997.93 |  | 5,997.93 |
| *1898.* |  |  |  |  |  |  |  |  |  |  |  |  |
| Regular supplies | $168,029.37 |  |  | 15,146.52 |  | 183,175.89 | $2,735.00 | $4,921.58 |  | 175,519.31 |  | 183,175.89 |
| Incidental expenses | 19,043.83 |  |  | 23,011.63 |  | 42,055.46 | 1,146.07 | 2,520.37 |  | 38,389.02 |  | 42,055.46 |
| Horses for cavalry and artillery | 1,904.20 |  |  |  |  | 1,904.20 |  |  |  | 1,904.20 |  | 1,904.20 |
| Barracks and quarters | 14,081.31 |  |  | 11,139.37 |  | 25,220.68 | 13,354.25 | 1,002.12 |  | 10,864.31 |  | 25,220.68 |
| Transportation of the Army and its supplies | 1,921.02 | $720.96 | June 6, 1900 | 18,256.07 |  | 20,898.05 | 12,470.25 | 7,946.84 |  | 480.96 |  | 20,898.05 |
| Clothing and camp and garrison equipage | 26,836.48 |  |  | 828.32 |  | 27,664.80 |  | 3.90 |  | 27,660.90 |  | 27,664.80 |
| Construction and repair of hospitals | 4,659.26 |  |  | 114.04 |  | 4,773.30 |  | 4,038.00 |  | 735.30 |  | 4,773.30 |
| National cemetries | 2,117.37 |  |  | 293.07 |  | 2,410.44 |  |  |  | 2,410.44 |  | 2,410.44 |
| Pay of superintendents of national cemeteries | 70.02 |  |  |  |  | 70.02 |  |  |  | 70.02 |  | 70.02 |
| Shooting galleries and ranges | 2,494.17 |  |  | 146.27 |  | 2,640.44 | 10.00 |  |  | 2,630.44 |  | 2,640.44 |
| Quarters for hospital stewards | 204.51 |  |  | 1.46 |  | 205.97 |  |  |  | 205.97 |  | 205.97 |

*Financial statement for fiscal year ending June 30, 1900*—Continued.

| Appropriations. | Balance in Treasury undrawn July 1, 1899. | Appropriated. | | Placed to credit of appropriations during the year, being the proceeds of sales to officers, etc. | Placed to credit of appropriations during the year by Treasury transfer warrants. | Total to be accounted for. | Remitted to disbursing officers. | Paid on settlements made at Treasury of claims and accounts. | Amounts charged against appropriations by Treasury transfer warrants. | Amounts carried to surplus fund, act June 20, 1874. | Balance in Treasury undrawn June 30, 1900, and available for outstanding obligations. | Total accounted for. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Amount. | Date of act. | | | | | | | | | |
| *1898.* | | | | | | | | | | | | |
| Military posts | $3,572.50 | | | $3,000.00 | | $6,572.50 | $1,600.00 | | | $4,972.50 | | $6,572.50 |
| Repairing roads to national cemeteries | 2,219.73 | | | | | 2,219.73 | | | | 2,219.73 | | 2,219.73 |
| Headstones for graves of soldiers | 1,779.90 | | | 1,840.77 | | 3,620.67 | 27.07 | $43.59 | | 3,550.01 | | 3,620.67 |
| Road to national cemetery, Springfield, Mo | 469.40 | | | | | 469.40 | | | | 469.40 | | 469.40 |
| Sewerage system, Fortress Monroe, Va | 3,393.88 | | | | | 3,393.88 | | | | 3,393.88 | | 3,393.88 |
| Improvement of Yellowstone National Park | 55.38 | | | 162.62 | | 218.00 | 218.00 | | | | | 218.00 |
| Total | 252,852.33 | $720.96 | | 73,940.14 | | 327,513.43 | 31,560.64 | 20,476.40 | | 275,476.39 | | 327,513.43 |
| *1899.* | | | | | | | | | | | | |
| Regular supplies | 3,780,255.19 | | | 667,185.90 | | 4,447,441.09 | 246,894.59 | 26,198.31 | | | $4,174,348.19 | 4,447,441.09 |
| Incidental expenses | 1,057,660.30 | | | 154,383.93 | | 1,212,044.23 | 133,004.82 | 38,402.96 | | | 1,040,636.45 | 1,212,044.23 |
| Horses for cavalry and artillery | 378,880.46 | | | 32,815.51 | | 411,695.97 | | | | | 411,695.97 | 411,695.97 |
| Barracks and quarters | 1,170,132.44 | | | 194,311.70 | | 1,364,444.14 | 186,871.36 | 48,591.11 | | | 1,128,981.67 | 1,364,444.14 |
| Transportation of the Army and its supplies | 8,129,217.49 | | | 1,358,453.85 | | 9,487,671.34 | 1,899,865.04 | 430,867.60 | | | 7,156,938.70 | 9,487,671.34 |
| Clothing and camp and garrison equipage | 4,327,254.60 | | | 512,347.95 | | 4,839,602.55 | 2,787,044.63 | 19,208.12 | | | 2,033,349.80 | 4,839,602.55 |
| Construction and repair of hospitals | 14,940.23 | | | 5,286.06 | | 20,226.29 | 19,766.08 | | | | 460.21 | 20,226.29 |
| National cemeteries | 7,676.94 | | | 1,138.28 | | 8,815.22 | 1,201.48 | 134.29 | | | 7,479.45 | 8,815.22 |
| Pay of superintendents of national cemeteries | 114.01 | | | 481.15 | | 595.16 | 7.33 | | | | 587.83 | 595.16 |
| Shooting galleries and ranges | 2,226.17 | | | 2,109.57 | | 4,335.74 | 1,022.72 | | | | 3,313.02 | 4,335.74 |
| Quarters for hospital stewards | | | | 339.25 | | 339.25 | 39.31 | | | | 299.94 | 339.25 |
| Military posts | 562,704.88 | | | 1,689.09 | | 564,393.97 | 497,636.57 | 3,000.00 | | | 63,757.40 | 564,393.97 |
| Repairing roads to national cemeteries | 259.38 | | | .50 | | 259.88 | | | | | 259.88 | 259.88 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Burial of indigent soldiers | 1,700.00 | | | | | 1,700.00 | 342.80 | | | | 1,357.20 | 1,700.00 |
| Headstones for graves of soldiers | 20,332.04 | | | 24.00 | | 20,356.04 | 6,630.70 | 32.89 | | | 13,692.45 | 20,356.04 |
| Road to national cemetery, Presidio of San Francisco, Cal | 64.54 | | | | | 64.54 | | | | | 64.54 | 64.54 |
| Road to national cemetery, Natchez, Miss | 4,000.00 | | | 498.30 | | 4,498.30 | 4,000.00 | | | | 498.30 | 4,498.30 |
| Military post, Bismarck, N. Dak | 40,000.00 | | | | | 40,000.00 | 39,756.20 | | | | 243.80 | 40,000.00 |
| Sewerage system, Fortress Monroe, Va | | | | 687.01 | | 687.01 | | | | | 687.01 | 687.01 |
| Improvement of Yellowstone National Park | | | | 20.00 | | 20.00 | | | | | 20.00 | 20.00 |
| Total | 19,497,418.67 | | | 2,931,772.05 | | 22,429,190.72 | 5,824,083.63 | 566,435.28 | | | 16,038,671.81 | 22,429,190.72 |
| *1900.* | | | | | | | | | | | | |
| Regular supplies | | 7,200,000.00 | Mar. 3,1899 | 130,849.18 | $750,000.00 | 8,080,849.18 | 4,878,618.63 | 287,811.41 | | | 2,914,419.14 | 8,080,849.18 |
| Incidental expenses | | 2,400,000.00 | do | 28,522.86 | 500,000.00 | 2,928,522.86 | 1,983,783.04 | 37,259.41 | | | 907,480.41 | 2,928,522.86 |
| Horses for cavalry and artillery | | 750,000.00 | do | 2,878.11 | 250,000.00 | 1,002,878.11 | 619,732.60 | 28,074.31 | | | 355,071.20 | 1,002,878.11 |
| Barracks and quarters | | 3,000,000.00 | do | 266,557.72 | 1,000,000.00 | 4,266,557.72 | 2,757,254.11 | 3,050.10 | | | 1,506,253.51 | 4,266,557.72 |
| Transportation of the Army and its supplies | | 17,500,000.00 | do | 445,375.61 | 20,750,000.00 | 38,695,375.61 | 30,260,673.89 | 354,991.13 | | | 8,079,710.59 | 38,695,375.61 |
| Clothing and camp and garrison equipage | | 5,952,246.00 | do | 528,905.83 | 2,000,000.00 | 8,481,151.83 | 5,626,195.33 | 133,333.85 | | | 2,721,622.65 | 8,481,151.83 |
| Construction and repair of hospitals | | 275,000.00 | do | 580.47 | | 275,580.47 | 141,204.99 | | | | 134,375.48 | 275,580.47 |
| National cemeteries | | 100,000.00 | do | 2,670.92 | | 102,670.92 | 100,685.81 | | | | 1,985.11 | 102,670.92 |
| Pay of superintendents of national cemeteries | | 61,880.00 | do | 885.00 | | 62,765.00 | 61,504.32 | | | | 1,260.68 | 62,765.00 |
| Shooting galleries and ranges | | 10,000.00 | do | | | 10,000.00 | 7,787.22 | | | | 2,212.78 | 10,000.00 |
| Quarters for hospital stewards | | 20,000.00 | do | | | 20,000.00 | 16,954.50 | | | | 3,045.50 | 20,000.00 |
| Military posts | | 670,000.00 | do | 230.63 | | 670,230.63 | 277,607.88 | | | | 392,622.75 | 670,230.63 |
| Repairing roads to national cemeteries | | 10,000.00 | do | 201.50 | | 10,201.50 | 10,151.62 | | | | 49.88 | 10,201.50 |
| Burial of indigent soldiers | | 3,000.00 | do | | | 3,000.00 | 1,400.00 | | | | 1,600.00 | 3,000.00 |
| Headstones for graves of soldiers | | 25,000.00 | do | 45.00 | | 25,045.00 | 5,137.25 | | | | 19,907.75 | 25,045.00 |
| Road to national cemetery Presidio, of San Francisco, Cal | | 5,000.00 | do | | | 5,000.00 | 5,000.00 | | | | | 5,000.00 |
| Sewerage system, Fortress Monroe, Va | | 6,864.00 | do | | | 6,864.00 | 6,864.00 | | | | | 6,864.00 |
| Antietam battlefield preservation | | 1,000.00 | do | | | 1,000.00 | 1,000.00 | | | | | 1,000.00 |
| Total | | 37,989,990.00 | | 1,407,702.83 | 25,250,000.00 | 64,647,692.83 | 46,761,555.19 | 844,520.21 | | | 17,041,617.43 | 64,647,692.83 |

*Financial statement for fiscal year ending June 30, 1900*—Continued.

| Appropriations. | Balance in Treasury undrawn July 1, 1899. | Appropriated. |  | Placed to credit of appropriations during the year, being the proceeds of sales to officers, etc. | Placed to credit of appropriations during the year by Treasury transfer warrants. | Total to be accounted for. | Remitted to disbursing officers. | Paid on settlements made at Treasury of claims and accounts. | Amounts charged against appropriations by Treasury transfer warrants. | Amounts carried to surplus fund, act June 20, 1874. | Balance in Treasury undrawn June 30, 1900, and available for outstanding obligations. | Total accounted for. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Amount. | Date of act. |  |  |  |  |  |  |  |  |  |
| *1900 and 1901.* |  |  |  |  |  |  |  |  |  |  |  |  |
| **Military roads and bridges, Alaska** |  | $100,000.00 | May 26, 1900 |  |  | $100,000.00 |  |  |  |  | $100,000.00 | $100,000.00 |
| *Appropriations for deficiencies, Jan. 1, 1899.* |  |  |  |  |  |  |  |  |  |  |  |  |
| Regular supplies | $3,188,287.81 |  |  | $482,353.16 |  | 3,670,640.97 |  | $17,146.28 | $3,050,000.00 |  | 603,494.69 | 3,670,640.97 |
| Incidental expenses | 3,550,834.26 |  |  | 135,543.73 |  | 3,686,377.99 | $69,984.00 | 113,530.33 | 3,100,000.00 |  | 402,863.66 | 3,686,377.99 |
| Horses for cavalry and artillery | 3,940,627.22 |  |  | 12,684.10 |  | 3,953,311.32 | 75.00 |  | 3,890,832.61 |  | 62,403.71 | 3,953,311.32 |
| Barracks and quarters | 11,125.40 |  |  | 28,489.98 |  | 39,615.38 |  | 17,614.55 |  |  | 22,000.83 | 39,615.38 |
| Transportation of the Army and its supplies | 11,662,423.82 |  |  | 869,817.52 |  | 12,532,241.34 | 300,046.19 | 356,718.22 | 11,200,000.00 |  | 675,476.93 | 12,532,241.34 |
| Clothing and camp and garrison equipage | 6,029,242.81 |  |  | 333,016.10 |  | 6,362,258.91 | 10,800.00 | 6,767.41 | 5,800,000.00 |  | 544,691.50 | 6,362,258.91 |
| Total | 28,382,541.32 |  |  | 1,861,904.59 |  | 30,244,445.91 | 380,905.19 | 511,776.79 | 27,040,832.61 |  | 2,310,931.32 | 30,244,445.91 |
| *Certified claims.* |  |  |  |  |  |  |  |  |  |  |  |  |
| Regular supplies |  | 365.21 | June 6, 1900 |  |  | 365.21 |  | 365.21 |  |  |  | 365.21 |
| Incidental expenses |  | 1,675.82 | do |  |  | 1,675.82 |  | 1,675.82 |  |  |  | 1,675.82 |
| Barracks and quarters |  | 160.00 | do |  |  | 160.00 |  | 160.00 |  |  |  | 160.00 |
| Transportation of the Army and its supplies | 1,034.32 | 772.04 | do |  |  | 1,806.36 |  | 772.04 |  |  | 1,034.32 | 1,806.36 |
| Horses and other property lost in the military service | 5,493.53 | 150.00 | do |  |  | 5,643.53 |  | 150.00 |  |  | 5,493.53 | 5,643.53 |
| Military posts |  | 30,048.00 | do |  |  | 30,048.00 |  | 30,048.00 |  |  |  | 30,048.00 |
| Headstones for graves of soldiers |  | 257.05 | do |  |  | 257.05 |  | 257.05 |  |  |  | 257.05 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pay, transportation, services, and supplies of Oregon and Washington volunteers in 1855 and 1856 | | 115.05 | do | | | 115.05 | | 115.05 | | | | 115.05 |
| Construction of military posts on the Yellow Stone and Musclesshell rivers | | 25.23 | do | | | 25.23 | | 25.23 | | | | 25.23 |
| Twenty per cent additional compensation | | 60.00 | do | | | 60.00 | | 60.00 | | | | 60.00 |
| Total | 6,527.85 | 33,628.40 | | | | 40,156.25 | | 33,628.40 | | | 6,527.85 | 40,156.25 |
| *Indefinite or special.* | | | | | | | | | | | | |
| Payment to John Finn | 543.11 | | | | | 543.11 | | | | | 543.11 | 543.11 |
| National cemetery, Fort Smith, Ark | .03 | | | 346.50 | | 346.53 | 346.50 | | | | .03 | 346.53 |
| Military post, Spokane, Wash | 38,854.02 | | | | | 38,854.02 | 7,708.69 | | | | 31,145.33 | 38,854.02 |
| Military post, Fort Meade, S. Dak | 29,500.00 | | | | | 29,500.00 | 24,677.50 | | | | 4,822.50 | 29,500.00 |
| Military post, Fort D. A. Russell, Wyo | 30,000.00 | | | | | 30,000.00 | 29,228.00 | | | | 772.00 | 30,000.00 |
| Bringing home the remains of officers and soldiers who die abroad | 91,584.40 | | | | $100,000.00 | 191,584.40 | 110,137.40 | 42.68 | | | 81,404.32 | 191,584.40 |
| Removal of remains of Gen. John A. Rawlins to Arlington Cemetery | 234.55 | | | | | 234.55 | | | | | 234.55 | 234.55 |
| Sewerage system, Fortress Monroe, Va | 2,902.20 | | | | | 2,902.20 | | | | | 2,902.20 | 2,902.20 |
| Miscellaneous advertisements, war with Spain | 1.75 | | | | | 1.75 | | .75 | | | 1.00 | 1.75 |
| Road from Newbern to the national cemetery, North Carolina | | 6,000.00 | May 14, 1900 | | | 6,000.00 | | | | | 6,000.00 | 6,000.00 |
| Military post, Sheridan, Wyo | | 100,000.00 | Apr. 7, 1900 | | | 100,000.00 | | | | | 100,000.00 | 100,000.00 |
| Garrison quarters, Sullivans Island, S. C | | 135,000.00 | May 25, 1900 | | | 135,000.00 | | | | | 135,000.00 | 135,000.00 |
| Bringing home remains of civil employees of the Army who die abroad, and soldiers who die on transports | | 100,000.00 | May 26, 1900 | | | 100,000.00 | 500.00 | | | | 99,500.00 | 100,000.00 |
| Burial of indigent soldiers | | | | 36.00 | | 36.00 | | | | $36.00 | | 36.00 |
| Suppressing hostilities of the Piute Indians in Nevada in 1860 | | 29,094.00 | Mar. 3, 1899 | | | 29,094.00 | | 26,593.00 | | | 2,501.00 | 29,094.00 |
| Battle lines and sites for tablets at Antietam | | .20 | June 6, 1900 | | | .20 | | .20 | | | | .20 |

*Financial statement for fiscal year ending June 30, 1900*—Continued.

| Appropriations. | Balance in Treasury undrawn July 1, 1899. | Appropriated. | | Placed to credit of appropriations during the year, being the proceeds of sales to officers, etc. | Placed to credit of appropriations during the year by Treasury transfer warrants. | Total to be accounted for. | Remitted to disbursing officers. | Paid on settlements made at Treasury of claims and accounts. | Amounts charged against appropriations by Treasury transfer warrants. | Amounts carried to surplus fund, act June 20, 1874. | Balance in Treasury undrawn June 30, 1900, and available for outstanding obligations. | Total accounted for. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Amount. | Date of act. | | | | | | | | | |
| *Indefinite or special*—Continued. | | | | | | | | | | | | |
| Miscellaneous advertising, War Department | .......... | $319.15 | June 6, 1900 | .......... | .......... | $319.15 | .......... | .......... | .......... | .......... | $319.15 | $319.15 |
| Relief of J. A. Ware | .......... | 3,718.52 | Mar. 26, 1900 | .......... | .......... | 3,718.52 | .......... | $3,718.52 | .......... | .......... | .......... | 3,718.52 |
| Relief of William Wolfe, value of schooner Anna Sophia | .......... | 8,000.00 | June 7, 1900 | .......... | .......... | 8,000.00 | .......... | 8,000.00 | .......... | .......... | .......... | 8,000.00 |
| Total | $193,620.06 | 382,131.87 | .......... | $382.50 | $100,000.00 | 676,134.43 | $172,598.09 | 38,355.15 | .......... | $36.00 | 465,145.19 | 676,134.43 |
| *Pacific roads.* | | | | | | | | | | | | |
| 1898 | .......... | .......... | .......... | .......... | 260,460.82 | 260,460.82 | .......... | 260,460.82 | .......... | .......... | .......... | 260,460.82 |
| 1899 | .......... | .......... | .......... | .......... | 246,111.61 | 246,111.61 | .......... | 246,111.61 | .......... | .......... | .......... | 246,111.61 |
| 1900 | .......... | .......... | .......... | .......... | 24,601.15 | 24,601.15 | .......... | 24,601.15 | .......... | .......... | .......... | 24,601.15 |
| Total | .......... | .......... | .......... | .......... | 531,173.58 | 531,173.58 | .......... | 531,173.58 | .......... | .......... | .......... | 531,173.58 |
| Transportation of volunteers, war with Spain | .......... | .......... | .......... | .......... | 37,673.00 | 37,673.00 | .......... | 37,673.00 | .......... | .......... | .......... | 37,673.00 |
| Reimbursement for bringing home remains of officers and others, Army | .......... | .......... | .......... | .......... | 1,051.85 | 1,051.85 | .......... | 1,051.85 | .......... | .......... | .......... | 1,051.85 |
| Grand total | 48,332,960.23 | 38,506,471.23 | .......... | 6,281,700.04 | 25,919,898.43 | 119,041,029.93 | 53,170,702.74 | 2,585,090.66 | $27,040,832.61 | 281,510.82 | 35,962,893.60 | 119,041,029.93 |

NOTE.—Of the $200,000 appropriated by act of December 18, 1897, for "Relief of people in mining regions of Alaska," there has been charged against the same on the books of this office during the fiscal year 1900 the sum of $2,758.05. Of the $50,000,000 appropriated by act of March 9, 1898, for "National defense," there has been charged against the same on the books of this office during the fiscal year 1900 the sum of $868. Of the $3,630.15 appropriated by act of March 3, 1899, for "Claims for quartermasters' stores and commissary supplies, act of July 4, 1864," there has been charged against the same on the books of this office during the fiscal year 1900 the sum of $736.60.

The records of this office show the following amounts remitted from regular and from indefinite or special appropriations:

*Remitted from regular appropriations, fiscal year 1900.*

| Departments, etc. | Regular supplies. | Incidental expenses. | Horses for cavalry and artillery. | Barracks and quarters. | Transportation of the Army and its supplies. |
|---|---|---|---|---|---|
| Department of California | $321,725.19 | $73,547.48 | $102,677.84 | $197,276.48 | $689,999.92 |
| Department of the Colorado | 335,669.03 | 39,875.42 | 36,058.55 | 111,875.11 | 259,586.76 |
| Department of the Columbia | 121,146.94 | 28,335.34 | 140,484.36 | 34,939.14 | 332,082.49 |
| Department of Dakota | 156,067.69 | 35,337.05 | 18,000.00 | 79,365.28 | 160,293.89 |
| Department of the East | 224,419.55 | 93,152.08 |  | 354,246.26 | 420,481.05 |
| Department of the Gulf | 34,824.20 | 22,767.94 |  | 44,384.79 | 200,980.07 |
| Department of the Lakes | 107,884.23 | 76,319.70 |  | 193,969.66 | 484,894.68 |
| Department of the Missouri | 255,000.33 | 65,788.99 | 93,254.85 | 197,047.69 | 359,469.56 |
| Department of Texas | 100,300.00 | 27,224.50 | 42,000.00 | 214,956.50 | 136,676.57 |
| Depot at New York | 1,337,387.70 | 129,613.90 | 3,555.00 | 145,740.38 | 1,699,422.84 |
| Depot at Philadelphia | 19,150.63 | 66,662.98 |  | 21,937.99 | 1,646,288.21 |
| Depot at Washington | 245,000.00 | 268,500.00 | 29,460.00 | 23,875.00 | 3,186,216.00 |
| Depot at Jeffersonville | 202,784.45 | 60,898.17 | 2,642.00 | 4,321.97 | 462,570.84 |
| Depot at St. Louis | 12,401.03 | 20,413.47 |  | 12,151.70 | 300,034.86 |
| Depot at San Francisco | 494,642.09 | 84,321.46 |  | 110,079.53 | 492,272.10 |
| Department of Alaska, chief quartermaster | 16,000.00 | 16,547.70 |  | 47,180.00 | 59,236.67 |
| Department of Alaska, Fort Egbert | 38,750.00 | 15,800.00 |  | 97,700.00 | 16,480.00 |
| Department of Alaska, Cooks Inlet exploring expedition | 200.00 | 3,150.00 |  |  | 4,750.00 |
| Department of Alaska, Copper River exploring expedition | 2,240.00 |  |  | 2,360.00 | 52,475.00 |
| Department of Alaska, Fort St. Michael | 250.00 | 5,160.00 |  | 25,470.00 | 7,817.96 |
| General superintendents army transport service: |  |  |  |  |  |
| New York | 4,000.00 | 77,102.40 |  | 3,341.33 | 4,257,602.20 |
| San Francisco | 18,550.00 | 59,250.00 |  |  | 8,926,258.36 |
| West Point, N. Y | 23,951.38 | 3,592.67 |  | 1,390,00 | 171.64 |
| Willets Point (Fort Totten), N. Y | 1,776.48 | 132.98 |  | 2,613.55 | 1,885.67 |
| Springfield Armory, Mass | 1,536.56 | 330.00 |  |  | 50.00 |
| Hot Springs, Ark | 4,418.00 | 3,531.00 |  | 471.00 | 2,025.00 |
| Josiah Simpson Hospital, Fort Monroe, Va | 2,204.58 | 2,114.33 |  | 726.83 | 2,280.00 |
| South Framingham, Mass | 1,714.06 | 563.35 |  | 1,309,25 | 2,568.21 |
| Fort Delaware, Del |  | 666.29 |  | 415.97 |  |
| Fort Ethan Allen, Vt | 61.00 | 2,963.64 |  | 227.50 | 1,627.50 |
| Fort Hancock, N. J | 37.50 | 2,003.35 |  | 1,786.11 | 7,228.67 |
| Fort Harrison, Mont |  | 100.00 |  |  | 67.00 |
| Fort Leavenworth, Kans | 487.52 | 694.12 |  |  | 125.00 |
| Fort McKenzie, Wyo |  |  |  |  | 8,889.00 |
| Fort Morgan, Ala |  | 2,238.11 |  |  | 12,942.92 |
| Fort Stevens, Oreg | 475.00 | 2,281.63 |  | 938.80 | 13,333.30 |
| Fort Thomas, Ky | 150.00 | 200.00 |  | 700.00 | 1,168.00 |
| Fort Washington, Md., and Fort Hunt, Va |  | 466.84 |  | 15,257.16 | 10,561.85 |
| Augusta Arsenal, Ga | 786.28 | 5.70 |  |  | 620.00 |
| Allegheny Arsenal, Pa | 579.60 |  |  |  | 86.85 |
| Benicia Arsenal, Cal | 1,817.31 | 6.00 |  |  | 800.00 |
| Columbia Arsenal, Tenn | 717.66 | 63.00 |  |  | 135.96 |
| Frankford Arsenal, Pa | 240.80 | 35.00 |  |  | 1,401.00 |
| Indianapolis Arsenal, Ind | 254.44 |  |  |  |  |
| Kennebec Arsenal, Me | 800.17 | 1.60 |  |  |  |
| Rock Island Arsenal, Ill | 1,841.29 | 192.69 |  |  | 821.32 |
| Watertown Arsenal, Mass | 2,143.60 | 113.03 |  |  | 846.09 |
| Watervliet Arsenal, N. Y | 856.17 | 101.07 |  |  | 422.20 |
| Baltimore, Md | 13,264.12 | 3,331.63 |  | 51,311.57 | 16,656.81 |
| Bismarck, N. Dak | 195.44 | 3,025.16 |  | 740.75 | 481.00 |
| Chicago, Ill | 880.05 | 1,757.65 | 111,600.00 | 200.00 | 7,557.38 |
| Cincinnati, Ohio | 520.19 | 2,362.91 |  | 1,422.98 | 487.10 |
| Columbus Barracks, Ohio | 5.20 | 999.04 |  |  | 5,798.50 |
| Galveston, Tex |  | 260.00 |  |  | 30.00 |
| Lytle, Ga | 6,540.00 | 12,299.02 |  | 253.00 | 30,910.90 |
| Middletown, Pa | 12,278.07 | 4,702.95 |  | 7,178.35 | 22,457.92 |
| New Orleans, La | 44,336.65 | 9,967.50 |  | 2,289.81 | 48,332.12 |
| Newport, R. I | 5,483.05 | 4,016.22 |  | 65,036.58 | 13,917.15 |
| Savannah, Ga | 17,251.30 | 14,680.08 |  | 4,109.75 | 26,822.88 |
| Seattle, Wash | 370,525.14 | 23,651.70 |  | 126,400.06 | 1,797,725.34 |
| Spokane, Wash | 397.04 | 2,662.80 |  | 832.43 | 1,491.26 |
| St. Asaph, Va | 75,009.75 | 29,624.93 |  | 3,307.40 | 50,826.95 |
| Tampa, Fla | 2,005.00 | 641.33 |  | 35.80 | 100.00 |
| Transport Logan | 3,000.00 | 7,000.00 |  |  | 60,000.00 |
| Transport Meade | 3,000.00 | 7,000.00 |  |  | 60,000.00 |
| Transport Thomas | 3,000.00 | 7,000.00 |  |  | 60,000.00 |
| Hospital ship Missouri | 3,000.00 | 3,000.00 |  |  | 42,000.00 |

*Remitted from regular appropriations, fiscal year 1900*—Continued.

| Departments, etc. | Regular supplies. | Incidental expenses. | Horses for cavalry and artillery. | Barracks and quarters. | Transportation of the Army and its supplies. |
|---|---|---|---|---|---|
| Department of Cuba: | | | | | |
| Havana and Santiago | $06,058.00 | $381,912.60 | | $252,857.00 | $1,924,436.83 |
| Gibara | 500.00 | 2,239.99 | | 2,500.00 | 10,220.00 |
| Department of Porto Rico | 52,127.17 | 117,020.10 | $40,000.00 | 239,615.32 | 579,949.54 |
| Honolulu, H. I | | 1,262.50 | | 1,108.33 | 229,025.00 |
| Manila, P. I | 110,000.00 | 50,200.00 | | 50,000.00 | 945,500.00 |
| Nagasaki, Japan | | | | | 100,000.00 |
| Total | 4,878,618.63 | 1,983,783.04 | 619,732.60 | 2,757,254.11 | 30,260,673.89 |

| Departments, etc. | Clothing and equipage. | Construction and repair of hospitals. | National cemeteries. | Pay of superintendents of national cemeteries. | Shooting galleries and ranges. | Quarters for hospital stewards. |
|---|---|---|---|---|---|---|
| Department of California | $4,509.64 | $1,450.56 | | | $65.73 | $3,608.68 |
| Department of the Colorado | 608.00 | 4.910.63 | | | 961.01 | 189.47 |
| Department of the Columbia | 1,150.00 | 3,764.96 | | | 148.51 | 119.54 |
| Department of Dakota | 1,517.50 | 3,401.78 | | | 1,072.98 | 3,187.78 |
| Department of the East | 114,389.21 | 60,053.85 | | | 1,841.65 | 5,403.94 |
| Department of the Gulf | 1,800.00 | 1,052.12 | | | | 542.39 |
| Department of the Lakes | 318,463.17 | 3,046.48 | $33.00 | | | 637.75 |
| Department of the Missouri | 910.48 | 7,509.13 | | | 1,186.87 | 437.70 |
| Department of Texas | 500.00 | 3,085.65 | | | 345.00 | 256.00 |
| Depot at New York | 1,112,883.03 | 47.49 | 1,965.75 | $900.00 | | |
| Depot at Philadelphia | 2,722,628.94 | | 4,153.72 | 2,280.00 | | |
| Depot at Washington | 150,750.00 | | 44,219.76 | 21,283.33 | | |
| Depot at Jeffersonville | 143,655.16 | | 2,079.95 | 3,680.00 | | |
| Depot at St. Louis | 8,866.14 | | 15,813.12 | 11,695.99 | | |
| Depot at San Francisco | 832,013.82 | | 2,066.36 | 720.00 | | |
| Department of Alaska, Fort St. Michael | 200.00 | | | | | |
| General superintendents army transport service: | | | | | | |
| New York | 3,000.00 | | | | | |
| West Point, N. Y | 12.00 | | | | 121.42 | |
| Willets Point, (Fort Totten) N. Y. | 48.00 | | | | | |
| Hot Springs, Ark | | 25,228.20 | | | | 2,571.25 |
| South Framingham, Mass | 3.20 | | | | | |
| Rock Island Arsenal, Ill | | | 532.90 | | | |
| Baltimore, Md | 2,912.56 | | | | | |
| Cincinnati, Ohio | 56.44 | | | | | |
| Lytle, Ga | 1,320.00 | | | | | |
| Middletown, Pa | 117.08 | | | | | |
| New Orleans, La | 11.00 | | 29,287.85 | 20,945.00 | | |
| Newport, R. I | | 19,833.90 | 533.40 | | | |
| Savannah, Ga | | 122.00 | | | | |
| Seattle, Wash | 11,564.09 | | | | | |
| St. Asaph, Va | 2,324.22 | | | | | |
| Transport Logan | 5,000.00 | | | | | |
| Transport Meade | 5,000.00 | | | | | |
| Transport Thomas | 5,000.00 | | | | | |
| Hospital ship Missouri | 2,000.00 | | | | | |
| Department of Cuba: | | | | | | |
| Havana and Santiago | 10,700.00 | | | | 1,202.80 | |
| Gibara | 150.00 | | | | | |
| Department of Porto Rico | 931.65 | 7,698.24 | | | 841.25 | |
| Manila, P. I | 161,200.00 | | | | | |
| Total | 5,626,195.33 | 141,204.99 | 100,685.81 | 61,504.32 | 7,787.22 | 16,954.50 |

| Departments, etc. | Military posts. | Repairing roads to national cemeteries. | Headstones for graves of soldiers. | Burial of indigent soldiers. | Antietam battlefield preservation. | Road to national cemetery, Presidio of San Francisco, Cal. | Sewerage system, Fortress Monroe, Va. | Total. |
|---|---|---|---|---|---|---|---|---|
| Department of California | | | | | | | | $1,394,861.52 |
| Department of the Colorado | | | | | | | | 789,783.98 |
| Department of the Columbia | | | | | | | | 662,171.28 |

*Remitted from regular appropriations, fiscal year 1900*—Continued.

| Departments, etc. | Military posts. | Repairing roads to national cemeteries. | Headstones for graves of soldiers. | Burial of indigent soldiers. | Antietam battlefield preservation. | Road to national cemetery, Presidio of San Francisco, Cal. | Sewerage system, Fortress Monroe, Va. | Total. |
|---|---|---|---|---|---|---|---|---|
| Department of Dakota |  |  |  |  |  |  |  | $458,243.95 |
| Department of the East | $116,988.02 |  | $4,569.25 |  |  |  |  | 1,395,544.86 |
| Department of the Gulf | 14,000.00 |  |  |  |  |  |  | 320,351.51 |
| Department of the Lakes |  |  |  |  |  |  |  | 1,185,248.67 |
| Department of the Missouri |  |  |  |  |  |  |  | 980,605.60 |
| Department of Texas |  |  |  |  |  |  |  | 525,344.22 |
| Depot at New York |  |  |  |  |  |  |  | 4,431,516.09 |
| Depot at Philadelphia |  |  |  |  |  |  |  | 4,483,102.42 |
| Depot at Washington |  | $3,413.67 | 568.00 | $1,400.00 | $1,000.00 |  |  | 3,975,685.76 |
| Depot at Jeffersonville |  |  |  |  |  |  |  | 882,632.54 |
| Depot at St. Louis |  | 2,645.20 |  |  |  |  |  | 384,021.51 |
| Depot at San Francisco |  |  |  |  |  | $5,000.00 |  | 2,021,115.36 |
| Department of Alaska, chief quartermaster |  |  |  |  |  |  |  | 138,964.37 |
| Department of Alaska, Fort Egbert |  |  |  |  |  |  |  | 168,730.00 |
| Department of Alaska, Cooks Inlet exploring expedition |  |  |  |  |  |  |  | 8,100.00 |
| Department of Alaska, Copper River exploring expedition |  |  |  |  |  |  |  | 57,075.00 |
| Department of Alaska, Fort St. Michael |  |  |  |  |  |  |  | 38,897.96 |
| General superintendents army transport service: |  |  |  |  |  |  |  |  |
| New York |  |  |  |  |  |  |  | 4,345,045.98 |
| San Francisco |  |  |  |  |  |  |  | 9,004,058.36 |
| West Point, N. Y |  |  |  |  |  |  |  | 29,239.11 |
| Willets Point (Fort Totten), N. Y | 8,537.20 |  |  |  |  |  |  | 14,993.88 |
| Springfield Armory, Mass |  |  |  |  |  |  |  | 1,916.56 |
| Hot Springs, Ark |  |  |  |  |  |  |  | 38,244.45 |
| Josiah Simpson Hospital, Fort Monroe, Va |  |  |  |  |  |  |  | 7,325.74 |
| South Framingham, Mass |  |  |  |  |  |  |  | 6,158.07 |
| Fort Delaware, Del |  |  |  |  |  |  |  | 1,082.26 |
| Fort Ethan Allen, Vt |  |  |  |  |  |  |  | 4,879.64 |
| Fort Hancock, N. J |  |  |  |  |  |  |  | 11,055.63 |
| Fort Harrison, Mont |  |  |  |  |  |  |  | 167.00 |
| Fort Leavenworth, Kans |  |  |  |  |  |  |  | 1,306.64 |
| Fort McKenzie, Wyo |  |  |  |  |  |  |  | 8,889.00 |
| Fort Monroe, Va |  |  |  |  |  |  | $6,864.00 | 6,864.00 |
| Fort Morgan, Ala |  |  |  |  |  |  |  | 15,181.03 |
| Fort Preble, Me | 60,029.75 |  |  |  |  |  |  | 60,029.75 |
| Fort Stevens, Oreg | 950.94 |  |  |  |  |  |  | 18,979.67 |
| Fort Thomas, Ky |  |  |  |  |  |  |  | 2,218.00 |
| Fort Washington, Md., and Fort Hunt, Va | 15,202.77 |  |  |  |  |  |  | 41,488.62 |
| Augusta Arsenal, Ga |  |  |  |  |  |  |  | 1,411.98 |
| Allegheny Arsenal, Pa |  |  |  |  |  |  |  | 666.45 |
| Benicia Arsenal, Cal |  |  |  |  |  |  |  | 2,623.31 |
| Columbia Arsenal, Tenn |  |  |  |  |  |  |  | 915.72 |
| Frankford Arsenal, Pa |  |  |  |  |  |  |  | 1,676.80 |
| Indianapolis Arsenal, Ind |  |  |  |  |  |  |  | 254.44 |
| Kennebec Arsenal, Me |  |  |  |  |  |  |  | 801.77 |
| Rock Island Arsenal, Ill |  |  |  |  |  |  |  | 3,388.20 |
| Watertown Arsenal, Mass |  |  |  |  |  |  |  | 3,102.72 |
| Watervliet Arsenal, N. Y |  |  |  |  |  |  |  | 1,379.44 |
| Baltimore, Md | 42,000.00 |  |  |  |  |  |  | 129,476.69 |
| Bismarck, N. Dak |  |  |  |  |  |  |  | 4,442.35 |
| Chicago, Ill |  |  |  |  |  |  |  | 121,995.08 |
| Cincinnati, Ohio |  |  |  |  |  |  |  | 4,849.62 |
| Columbus Barracks, Ohio |  |  |  |  |  |  |  | 6,802.74 |
| Galveston, Tex |  |  |  |  |  |  |  | 290.00 |
| Lytle, Ga |  |  |  |  |  |  |  | 51,322.92 |
| Middletown, Pa |  |  |  |  |  |  |  | 46,734.37 |
| New Orleans, La |  | 4,092.75 |  |  |  |  |  | 159,262.68 |

*Remitted from regular appropriations, fiscal year 1900*—Continued.

| Departments, etc. | Military posts. | Repairing roads to national cemeteries. | Headstones for graves of soldiers. | Burial of indigent soldiers. | Antietam battlefield preservation. | Road to national cemetery, Presidio of San Francisco, Cal. | Sewerage system, Fortress Monroe, Va. | Total. |
|---|---|---|---|---|---|---|---|---|
| Newport, R. I | $3,831.40 | | | | | | | $112,651.70 |
| Savannah, Ga | | | | | | | | 62,986.01 |
| Seattle, Wash | 16,067.80 | | | | | | | 2,346,024.13 |
| Spokane, Wash | | | | | | | | 5,383.53 |
| St. Asaph, Va | | | | | | | | 161,093.25 |
| Tampa, Fla | | | | | | | | 2,782.13 |
| Transport Logan | | | | | | | | 75,000.00 |
| Transport Meade | | | | | | | | 75,000.00 |
| Transport Thomas | | | | | | | | 75,000.00 |
| Hospital ship Missouri | | | | | | | | 50,000.00 |
| Department of Cuba: | | | | | | | | |
| Havana and Santiago | | | | | | | | 2,631,167.23 |
| Gibara | | | | | | | | 15,609.99 |
| Department of Porto Rico | | | | | | | | 1,038,183.27 |
| Honolulu, H. I | | | | | | | | 231,395.83 |
| Manila, P. I | | | | | | | | 1,316,900.00 |
| Nagasaki, Japan | | | | | | | | 100,000.00 |
| Total | 277,607.88 | $10,511.62 | $5,137.25 | $1,400.00 | $1,000.00 | $5,000.00 | $6,864.00 | 46,761,555.19 |

*Remitted from indefinite or special appropriations during the fiscal year 1900.*

| | Bringing home the remains of officers and soldiers who die abroad. | Bringing home remains of civil employees who die abroad and soldiers who die on transports. | Military post, Fort D. A. Russell, Wyo | Military post, Fort Meade, S. Dak | Military post, Spokane, Wash. | National cemetery, Fort Smith, Ark. | Total. |
|---|---|---|---|---|---|---|---|
| Department of the Colorado | | | $29,228.00 | | | | $29,228.00 |
| Department of Dakota | | | | $24,677.50 | | | 24,677.50 |
| Depot at New York | $50,550.37 | $500.00 | | | | | 51,050.37 |
| Depot at Washington | 15,000.00 | | | | | | 15,000.00 |
| Depot at St. Louis | | | | | | $346.50 | 346.50 |
| Depot at San Francisco | 27.263.27 | | | | | | 27,263.27 |
| Spokane, Wash | | | | | $7,708.69 | | 7,708.69 |
| Habana, Cuba | 5,323.76 | | | | | | 5,323.76 |
| Manila, P. I | 12,000.00 | | | | | | 12,000.00 |
| Total | 110,137.40 | 500.00 | 29,228.00 | 24,677.50 | 7,708.69 | 346.50 | 172,598.09 |

## MONEY ACCOUNTS.

The assignment of work under this head consists of the administrative examination of the money accounts of officers serving in the Quartermaster's Department before their transmission to the Auditor for the War Department.

The following is a statement showing the number of accounts received, examined, and forwarded to the Auditor during the fiscal year ending June 30, 1900:

| | |
|---|---|
| Received during the year ending June 30, 1900 | 5,784 |
| Forwarded to the Auditor for the War Department during the year ending June 30, 1900 | 5,646 |

### RETURNS OF QUARTERMASTER'S SUPPLIES.

The work in this branch consists of the examination of quarterly returns of quartermaster's supplies for use of the Army, both regular and volunteer, and of the militia of the several States and Territories, and the correspondence pertaining to the same. Preliminary action is also taken on reports of boards of survey and inspection reports from quartermasters' depots and independent posts. The following statement shows the number of returns received and examined, and letters written during the fiscal year ended June 30, 1900, viz:

| | |
|---|---|
| Returns on hand June 30, 1899 | 154 |
| Returns received during fiscal year 1900 | 3,789 |
| Returns examined during fiscal year 1900 | 3,933 |
| Returns on hand June 30, 1900 | 10 |
| Annual returns of supplies for militia | 33 |
| Letters written pertaining to the above | 13,665 |

This is 839 less returns and 1,760 more letters than in 1899.

The returns received from volunteer officers during the fiscal year 1900 show a marked improvement over those for the previous year, many of which are still suspended awaiting satisfactory replies to letters of remark, and this is the cause of increase in number of letters written during fiscal year 1900.

The clerical force on duty in this branch June 30, 1900, was composed of 14 regular and 18 temporary clerks, who by diligent attention to duty have kept the work up to date without working extra hours, as was often required last year.

### MAIL AND RECORD DIVISION.

The following communications were received and letters and indorsements mailed during the fiscal year:

| | |
|---|---|
| Original cases | 15,987 |
| Received backs | 105,433 |
| Letters and indorsements mailed | 123,595 |

### MISCELLANEOUS CLAIMS AND ACCOUNTS.

There remained on hand at the beginning of the fiscal year awaiting action—

| | |
|---|---|
| 152 miscellaneous claims, amounting to | $88,652.28 |
| 347 accounts, amounting to | 27,443.48 |

There were received during the fiscal year—

| | |
|---|---|
| 293 miscellaneous claims, amounting to | 224,690.29 |
| 1,064 accounts, amounting to | 50,288.53 |
| Total, 1,856 claims and accounts, amounting to | 391,074.58 |

Final action was taken on these as follows:

| | |
|---|---|
| 54 claims were approved for payment | $9,444.85 |
| 166 claims were referred to other departments | 226,770.77 |
| 108 claims were sent to the Treasury Department for settlement | 19,040.49 |
| 69 claims were rejected | 21,842.10 |
| Reduction on claims referred | 23,580.31 |
| 669 accounts were approved for payment | 26,817.15 |
| Reduction on accounts approved | 1,022.00 |
| 449 accounts were referred to other departments | 20,982.54 |
| 61 accounts were rejected, amounting to | 8,558.13 |
| Total upon which final action was taken, 397 claims and 1,179 accounts, amounting to | 358,058.34 |

On July 1, 1900, there were on hand awaiting action—

| | |
|---|---|
| 48 claims, amounting to | $12,664.05 |
| 232 accounts, amounting to | 20,352.19 |
| Total, 280 claims and accounts | 33,016.24 |

### CLAIMS UNDER ACT OF JULY 4, 1864.

There remained in this office on July 1, 1900, not finally acted upon, 94 claims presented under the act of July 4, 1864, amounting to $119,104.12, the papers in one of this class of claims amounting to $100 having been transmitted to the Auditor for the War Department during the year. Action upon these claims has been suspended awaiting additional evidence.

The papers pertaining to 52 claims, amounting to $483,586.41, which had previously been investigated and disallowed by the Quartermaster-General, were during the year transmitted to the Court of Claims and Department of Justice for use as evidence in such cases as had been appealed to the Court of Claims under provision of the law of March 3, 1883, known as the Bowman Act, and the papers in three of such claims, amounting to $37,404.33, were transmitted to the Committee on War Claims, House of Representatives.

### NEWSPAPERS AND PERIODICALS.

During the fiscal year, newspapers and periodicals have been supplied for the enlisted men of the Army stationed within the States, in Cuba, and in Porto Rico, at 170 military post libraries at posts garrisoned by 344 companies and detachments, at a cost of $2,368.53, and to the enlisted men in the Philippines at a cost of $584.97.

### PRINTING AND BINDING.

During the fiscal year 143 requisitions were made on the Public Printer for printing and binding.

The cost for the work, so far as bills have been received, is $9,175.55, which sum does not include the cost of work done in the War Department branch printing office.

### NATIONAL CEMETERIES.

The national cemeteries are classed as follows:

| | |
|---|---|
| First class | 25 |
| Second class | 20 |
| Third class | 16 |
| Fourth class | 22 |
| Total | 83 |

The interments therein to June 30, 1900, were—

| | |
|---|---|
| Known | 190,653 |
| Unknown | 151,589 |
| Total | 342,242 |

Being an increase of 2,244 interments during the year, of which number 679, including remains of officers and soldiers from abroad, were interred in the Arlington, Va., and 596 in the San Francisco, Cal., national cemeteries.

There are 75 superintendents of national cemeteries, authorized by law; of these, 74 were in service at the commencement of the year. Changes during the year were: Appointed, 1; resigned, 1; died, 3; leaving 71 in service at the close of the year. There were also four assistant superintendents serving probationary terms pending permanent appointment.

### REMOVALS OF REMAINS.

Removals of remains of officers and enlisted men from abandoned post cemeteries and other places to permanent post or national cemeteries were made as follows:

| From— | To— | Number. |
|---|---|---|
| Potter's field, New Orleans, La | Chalmette, La., National Cemetery | 1 |
| Old Fort Spokane, Wash | Post Cemetery, Fort Wright, Wash | 42 |
| Do | National Cemetery, San Francisco, Cal | 1 |
| Fort Casper, Wyo | Post Cemetery, Fort D. A. Russell, Wyo | 10 |
| Frenchville, W. Va | Culpeper, Va., National Cemetery | 1 |
| Farm near Seven Pines, Va | Seven Pines, Va., National Cemetery | 1 |
| Reno battlefield, Mont | Custer Battlefield, Mont., National Cemetery | 4 |
| Camp Warner, Oreg | National Cemetery, San Francisco, Cal | 13 |
| Do | Post Cemetery, Vancouver Barracks, Wash | 1 |
| Camp Eagle Pass (Fort Duncan), Tex | San Antonio, Tex., National Cemetery | 72 |
| Camp Pena, Colorado, Tex | do | 9 |
| Morganton, N. C | Salisbury, N. C., National Cemetery | 5 |
| Light-house Reservation, Fort Morgan, Ala | Mobile, Ala., National Cemetery | 1 |
| Woodland Cemetery, Quincy, Ill | Soldiers' lot, Graceland Cemetery, Quincy, Ill. | 287 |
| Old Fort Wilkins, Mich | Lakeview Cemetery, Calumet, Mich | 7 |
| Total |  | 455 |

### HEADSTONES.

Six thousand nine hundred and thirty-three white marble headstones were provided to mark the graves of known Union soldiers, sailors, and marines in national, post, city, and village cemeteries.

### INDIGENT SOLDIERS.

Under the acts of Congress (sundry civil) making appropriations for "Expenses of burying in the Arlington National Cemetery, or in the cemeteries of the District of Columbia, indigent ex-Union soldiers, sailors, and marines of the late civil war, who die in the District of Columbia," claims for the burial of 58 such persons have been paid, at a total cost of $2,266.80.

### SOLDIERS' LOTS.

The work of improving the soldiers' lot in Oak Hill Cemetery, Evansville, Ind., for which a contract was made during the previous fiscal year, has progressed so far as the appropriation permitted, at an expenditure of $973.18. Instructions have been given for completion of the work under an additional appropriation of $615 (sundry civil), approved June 6, 1900.

At the soldiers' lot in City Cemetery at Baxter Springs, Kans., the fence was reconstructed, the grounds put in order, and a new wooden flagstaff erected.

### ANTIETAM BATTLEFIELD.

Under the appropriation, $1,000, sundry civil, approved March 3, 1899, "For repair and preservation of the monuments, tablets, observation tower, roads, fences, etc., made and constructed by the United States, upon public land within the limits of the Antietam battlefield, near Sharpsburg, Md.," a portion of one avenue was resurfaced with macadam, the fences and bridge repaired, and tablets painted, at an expenditure of $999.78.

## ROADWAYS.

### PENSACOLA, FLA.

The work of shelling and otherwise improving the roadway from Pensacola, Fla., to the national cemetery near that city, under the appropriation, $10,000, sundry civil, approved July 1, 1898, was completed at a total cost of $9,988.39, including the sum of $1,831.39, expended during the fiscal year ending June 30, 1899.

### NATCHEZ, MISS.

The work of improving and completing the road and sidewalks from the city of Natchez, Miss., to the national cemetery near that city, under the appropriation, $4,000, sundry civil, approved July 1, 1898, and for which a contract was made during the previous fiscal year, was completed at an expenditure of $3,501.70. The general condition of the road from the national cemetery to New street is good.

### MOUND CITY, ILL.

*Cache River Branch.*—Under the act of Congress approved June 4, 1900, appropriating the sum of $12,000 "for permanently repairing the Government roadway from Cache River bridge, in Pulaski County, Ill., to the graveled roadway extending from Mound City, Ill., to the national cemetery near that city," plans and specifications for the work are being prepared.

Under the act of Congress (sundry civil) approved March 3, 1899, making appropriation "for repairs to roadways to national cemeteries which have been constructed by special authority of Congress," necessary repairs have been made to the roadways to national cemeteries at Alexandria, Va.; Alexandria, La.; Antietam, Md.; Baton Rouge, La.; Corinth, Miss.; Culpeper, Va.; Fayetteville, Ark.; Florence, S. C.; Fredericksburg, Va.; Marietta, Ga.; Mound City, Ill., including the Cache River branch; Newbern, N. C.; Natchez, Miss.; Port Hudson, La.; Richmond, Va.; Springfield, Mo.; Staunton, Va., and Vicksburg, Miss. Amount expended, $9,392.09.

Memorial Day (May 30) was observed at the several national cemeteries by appropriate services conducted by the Grand Army of the Republic and military and other organizations.

## IMPROVEMENTS AND REPAIRS OF NATIONAL CEMETERIES.

At the Alexandria, La., National Cemetery necessary repairs were made to the lodge and outbuildings and a new wooden flagstaff, 75 feet in length, erected.

At the Antietam, Md., National Cemetery repairs were made to the lodge, outbuildings, and water supply, and the grounds properly cared for.

At the Arlington, Va., National Cemetery repairs were made to the enclosing walls, mansion, outbuildings, water supply, and drainage, and the grounds, walks, and drives kept in good order. The construction of brick outbuilding for protection of wagons, tools, etc., and the repairs to greenhouse and grading new grounds, under contracts awarded during the previous fiscal year, were completed.

Four captured guns were placed to ornament the section in which remains of soldiers of the war with Spain, returned from Cuba and Porto Rico, were interred, and two howitzers and a large anchor on the section in which the remains of 165 sailors and marines, victims of the disaster to the U. S. battleship *Maine* in the harbor of Havana, Cuba, February 15, 1898, were buried in December, 1899, with appropriate ceremonies.

The remains of a number of commissioned officers of the regular and volunteer service, returned from Cuba, Porto Rico, and the Philippine Islands, were interred in the officers' burial section, special reference being made in my remarks under the head of removal of remains.

At the Barrancas, Fla., National Cemetery necessary repairs were made to the buildings and a post and wire fence erected to inclose the lodge lot.

At the Baton Rouge, La., National Cemetery extensive repairs were made to the lodge, under contract, at an expenditure of $1,190.

At the Battle Ground, D. C., National Cemetery, upon representation by the Engineer Commissioner of the District of Columbia that the front inclosing wall of the cemetery encroached upon the public highway (Brightwood avenue), and a survey of the ground showing the encroachment to be as represented, a contract was made for setting back and reconstructing the wall on the proper line. The work is now in progress.

At the Beverly, N. J., National Cemetery necessary repairs were made to the lodge and water supply and a system for drainage constructed.

At the Camp Butler, Ill., National Cemetery the inclosing wall was repointed, the lodge repaired and papered, the outbuilding repaired, and the drainage reconstructed.

At the Chattanooga, Tenn., National Cemetery necessary repairs were made to the outbuildings, the grounds, walks, and drives kept in good order, and a brick addition made to the lodge for use as a kitchen.

At the Culpeper, Va., National Cemetery the brick addition to the lodge, contracted for during the previous fiscal year, was completed and necessary repairs made to the water supply and drainage.

At the Cypress Hills, N. Y., National Cemetery the water supply was thoroughly repaired, a water meter and new service pipe and connections put in, and the drainage put in good condition.

At the Fayetteville, Ark., National Cemetery the inclosing wall was repointed, the lodge repaired and painted, and the flagstaff and rostrum painted.

At the Fort Gibson, Ind. T., National Cemetery necessary repairs were made to the inclosing wall, lodge, and stable, and the flagstaff painted.

At the Fort Leavenworth, Kans., National Cemetery the lodge and rostrum were repaired and painted and the water supply and drainage repaired.

At the Fort Scott, Kans., National Cemetery the windmill and tower and new flagstaff, contracted for during the previous fiscal year, were erected and the lodge and outbuildings repaired.

At the Glendale, Va., National Cemetery the new flagstaff, 75 feet in length, contracted for during the previous fiscal year, was erected and the water supply increased by construction of a well.

At the Hampton, Va., National Cemetery the brick addition to the lodge, for which a contract was made during the previous fiscal year, was completed and necessary repairs made to the water supply.

At the Jefferson Barracks, Mo., National Cemetery the inclosing wall and gates and the lodge and rostrum were repaired and a new wooden flagstaff erected.

At the Little Rock, Ark., National Cemetery necessary repairs were made to the inclosing wall and lodge and a new wooden flagstaff erected.

At the Mound City, Ill., National Cemetery the lodge and outbuildings were repaired and painted and the drainage repaired.

At the Nashville, Tenn., National Cemetery necessary repairs were made to the buildings, the drives and walks properly cared for, and the water supply improved by erection of a new windmill with steel tower.

At the Philadelphia, Pa., National Cemetery necessary repairs were made to the buildings and water supply and the rostrum and flagstaff were painted.

At Quincy, Ill., the remains of the 287 soldiers buried in Woodland Cemetery were removed and reinterred in a plot of ground set apart for that purpose in Graceland Cemetery, near that city, and a new wooden flagstaff, 75 feet in length, provided for the new site. Under an agreement with the Graceland Cemetery Association the soldiers' graves are to be cared for and protected hereafter without expense to the Government.

At the San Francisco, Cal., National Cemetery necessary repairs were made to the buildings and the grounds, walks, and trees kept in good order. During the month of February a wooden structure 20 by 25 feet was erected west of the main gate and north of the iron fence, to be used as a storehouse for the remains of officers and soldiers returned from abroad awaiting claimants and burial. Memorial Day was observed by covering the graves with flowers by citizens, members of the Regular Army and Navy Union, Grand Army of the Republic, and the troops at the Presidio.

At the Soldiers' Home, D. C., National Cemetery the rostrum and flagstaff, damaged by storm August 2, 1899, were repaired, the grounds put in order, and the brick addition to the lodge, contracted for during the previous fiscal year, completed.

At the Springfield, Mo., National Cemetery repairs were made to the lodge and rostrum and a new frame privy erected for public use.

At all other national cemeteries necessary repairs were made and the grounds, walks, and drives kept in good order.

A statement, marked A, showing the expenditures on account of the several national cemeteries during the fiscal year, is submitted herewith.

### REMOVAL OF REMAINS.

During the past fiscal year the remains of officers, enlisted men, and others connected with the United States service were brought to the United States from Cuba, Porto Rico, Honolulu, and the Philippine

Islands, and either sent to relatives or interred in national cemeteries, under authority of acts of Congress approved July 8, 1898, February 9, May 26, and June 6, 1900, as follows:

### FROM CUBA.

| | | |
|---|---|---|
| Identified remains received at New York City on Government transports (disinterred by burial corps) and sent to relatives | | 159 |
| Identified remains received at New York City on Government transports (disinterred by burial corps) and sent to Arlington National Cemetery, Va | | 157 |
| Unknown bodies received at New York City on Government transports (disinterred by burial corps) and sent to Arlington National Cemetery, Va | | 5 |
| Unknown body received at New York City on Government transport from Santiago, Cuba, and sent to Cypress Hills National Cemetery, N. Y | | 1 |
| Identified remains of marines received at New York City on Government transport (disinterred by burial corps) and turned over to navy officials at Brooklyn | | 2 |
| Identified remains received at Newport News, Va., on transport *McPherson* (disinterred by burial corps) and sent to relatives | | 28 |
| Identified remains received at Newport News, Va., on transport *McPherson* (disinterred by burial corps) and sent to Arlington National Cemetery, Va., including one unknown soldier | | 69 |
| Yellow fever bodies stored on island in Santiago Bay in 1899, brought to New New York City on Government transport: | | |
| Identified, sent to relatives | 27 | |
| Identified, sent to Arlington National Cemetery | 27 | |
| Unknown, sent to Arlington National Cemetery | 18 | |
| | | 72 |
| Total bodies returned from Cuba | | 493 |

### FROM PORTO RICO.

| | |
|---|---|
| Identified remains received at New York City on Government transports (disinterred by burial corps) and sent to relatives | 16 |
| Identified remains received at New York City on Government transports (disinterred by burial corps) and sent to Arlington National Cemetery, Va | 20 |
| Civilian remains brought to New York City on Government transport and delivered to friends at pier, not disinterred by burial corps | 1 |
| Total bodies returned from Porto Rico | 37 |

### FROM HONOLULU.

| | |
|---|---|
| The remains of 1 officer and 1 soldier were received at San Francisco, Cal., on Government transport and sent to relatives. Total bodies received from the Hawaiian Islands | 2 |

### FROM PHILIPPINE ISLANDS.

| | |
|---|---|
| Identified remains of officers received at San Francisco, Cal., on Government transports and sent to relatives | 34 |
| Identified remains of officers received at San Francisco, Cal., on Government transports and interred in the national cemetery, Presidio of San Francisco. | 4 |
| Identified remains of officers received at San Francisco, Cal., on Government transports and transferred to Arlington National Cemetery, Va., for interment | 12 |
| Identified remains of enlisted men received at San Francisco, Cal., on Government transports and sent to relatives | 709 |
| Identified remains of enlisted men received at San Francisco, Cal., on Government transports and interred in the national cemetery, Presidio of San Francisco | 454 |
| Identified remains of enlisted men received at San Francisco, Cal., on Government transports and transferred to Arlington National Cemetery, Va, for interment | 12 |
| Identified remains of civilians received at San Francisco, Cal., on Government transports and sent to relatives | 8 |
| Identified remains of civilians received at San Francisco, Cal., on Government transports and interred in the national cemetery, Presidio of San Francisco.. | 14 |

| | | |
|---|---|---|
| Unidentified remains of enlisted men received at San Francisco, Cal., on Government transports and interred in the national cemetery, Presidio of San Francisco | | 15 |
| Remains of navy men received at San Francisco, Cal., on Government transports and turned over to navy officials for transfer to Mare Island Navy-Yard: | | |
| Identified | 6 | |
| Unidentified | 1 | |
| | | 7 |
| Identified remains received at San Francisco, Cal., on Government transports not disposed of at close of fiscal year: | | |
| Officer | 1 | |
| Enlisted men | 86 | |
| Civilian | 1 | |
| | | 88 |
| Total bodies returned from the Philippines | | 1,357 |

One thousand and seventy-three of the above remains were disinterred by burial corps sent to the Philippines from the United States, and the other 284 were the remains of those who either died en voyage and were brought to San Francisco or transported immediately after death without being interred in the Philippines.

The remains of Lieutenant-Commander Carlin of the Navy were received at San Francisco on Government transport and forwarded to Illinois for burial.

### RECAPITULATION.

| Bodies returned from— | |
|---|---|
| Philippine Islands | 1,357 |
| Cuba | 493 |
| Porto Rico | 37 |
| Hawaiian Islands | 2 |
| Total bodies returned | 1,889 |

Burial corps were sent to Cuba, Porto Rico, and the Philippines in charge, respectively, of Solon F. Massey, C. E. Norton, and D. H. Rhodes, and the result of their efforts shows that the work was thoroughly and efficiently done.

The remains of officers and soldiers stored or temporarily interred on the island in Santiago Bay in 1899, a total of 72, were removed to the United States.

Upon returning from the Philippines, after the work of disinterment had been suspended for the time being, it was found impracticable for the burial corps to proceed to exhume the remains of the 39 officers and soldiers which were interred at Honolulu, because of the bubonic plague then prevalent in the Hawaiian Islands. When another burial corps is sent to the Philippines, if circumstances and conditions at that time render it feasible, the remains at Honolulu will be taken up and transported to San Francisco, Cal.

There appeared to be slight, if any, objection on the part of the military authorities in the Philippines to the exhumation and removal of all classes of remains, irrespective of cause of death, and the remains exhumed by the burial corps, as well as those embalmed and transported immediately after death, were those of officers, soldiers, and civilians who died or were killed in action, excepting such as died from smallpox. None of the latter class were transported, because of the regulations of the board of health of the city and county of San Francisco, Cal., prohibiting their entry into or passage through the city, it being dangerous, in their opinion, to the public health.

Respectfully submitted.

W. S. Patten,
*Major and Quartermaster, U. S. A.*

The Quartermaster-General U. S. A.

## "A."

*A statement of disbursements of appropriations for national cemeteries during the fiscal year ended June 30, 1900.*

| Name of cemetery. | Amount. | Name of cemetery. | Amount. |
|---|---|---|---|
| Alexandria, La | $671.23 | Keokuk, Iowa | $328.71 |
| Alexandria, Va | 842.13 | Knoxville, Tenn | 564.69 |
| Andersonville, Ga | 1,198.26 | Lebanon, Ky | 167.74 |
| Annapolis, Md | 399.44 | Lexington, Ky | 60.00 |
| Antietam, Md | 746.32 | Little Rock, Ark | 1,352.67 |
| Arlington, Va | 32,970.15 | Loudon Park, Md | 590.59 |
| Balls Bluff, Va | 25.00 | Marietta, Ga | 1,354.39 |
| Barrancas, Fla | 894.95 | Memphis, Tenn | 1,766.59 |
| Baton Rouge, La | 1,805.67 | Mexico City, Mexico | 628.49 |
| Battle Ground, D. C | 165.10 | Mill Springs, Ky | 220.43 |
| Beaufort, S. C | 944.34 | Mobile, Ala | 226.25 |
| Beverly, N. J | 605.77 | Mound City, Ill | 819.80 |
| Brownsville, Tex | 807.90 | Nashville, Tenn | 2,988.65 |
| Camp Butler, Ill | 758.69 | Natchez, Miss | 935.33 |
| Camp Nelson, Ky | 635.84 | New Albany, Ind | 478.10 |
| Cave Hill, Ky | 51.20 | Newbern, N. C | 495.29 |
| Chalmette, La | 1,160.85 | Philadelphia, Pa | 1,147.06 |
| Chattanooga, Tenn | 3,669.05 | Poplar Grove, Va | 431.41 |
| City Point, Va | 802.13 | Port Hudson, La | 540.53 |
| Cold Harbor, Va | 481.21 | Quincy, Ill | 4,298.91 |
| Corinth, Miss | 1,290.09 | Raleigh, N. C | 615.64 |
| Crown Hill, Ind | 10.00 | Richmond, Va | 906.12 |
| Culpeper, Va | 938.19 | Rock Island, Ill | 532.90 |
| Custer Battlefield, Mont | 612.39 | Salisbury, N. C | 536.32 |
| Cypress Hills, N. Y | 1,593.05 | San Antonio, Tex | 141.85 |
| Danville, Ky | 100.00 | San Francisco, Cal | 2,111.38 |
| Danville, Va | 353.80 | Santa Fe, N. Mex | 925.89 |
| Fayetteville, Ark | 557.59 | Seven Pines, Va | 583.95 |
| Finns Point, N. J | 376.47 | Shiloh, Tenn | 686.98 |
| Florence, S. C | 229.68 | Soldiers' Home, D. C | 3,775.93 |
| Fort Donelson, Tenn | 399.79 | Springfield, Mo | 726.54 |
| Fort Gibson, Ind. T | 481.65 | St. Augustine, Fla | 75.00 |
| Fort Harrison, Va | 239.78 | Staunton, Va | 348.03 |
| Fort Leavenworth, Kans | 1,273.94 | Stone River, Tenn | 1,103.77 |
| Fort McPherson, Nebr | 518.47 | Vicksburg, Miss | 3,209.70 |
| Fort Scott, Kans | 1,173.03 | Wilmington, N. C | 457.13 |
| Fort Smith, Ark | 547.63 | Winchester, Va | 473.04 |
| Fredericksburg, Va | 1,100.04 | Woodlawn, N. Y | 100.00 |
| Gettysburg, Pa | 955.45 | Yorktown, Va | 256.58 |
| Glendale, Va | 555.76 | Soldiers' lots | 434.90 |
| Grafton, W. Va | 458.03 | Miscellaneous | 3,781.45 |
| Hampton, Va | 1,406.69 | | |
| Jefferson Barracks, Mo | 2,656.21 | Total | 106,808.04 |
| Jefferson City, Mo | 166.35 | | |

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
*September 15, 1900.*

GENERAL: I have the honor to submit herewith the following report of the operations of the clothing and equipage supply branch of this office for the fiscal year ended June 30, 1900.

This branch, as its name implies, has charge of all the purchases, manufactures, and issues of clothing and equipage required by the Army of the United States and by the militia of the States and Territories.

### RECEIPTS AND EXPENDITURES.

| | |
|---|---|
| The annual appropriation, clothing, and equipage for fiscal year ending June 30, 1900 | $5,952,246.00 |
| Appropriation to supply urgent deficiencies, act of Congress approved February 9, 1900 | 2,000,000.00 |
| To which were credited during the last fiscal year the following amounts: | |
| Reimbursements on account of issues to the militia of the States and Territories | [1]295,790.84 |

---

[1] $10,466.03 of this amount covers reimbursement for militia issues not actually settled by the Treasury Department during the preceding fiscal year.

| | | |
|---|---|---|
| Collections by Pay Department on account of clothing drawn by the enlisted men in excess of their allowance; also from sales to officers, to the militia, and surveying expeditions, authorized by law | | $233,114.99 |
| Total | | 8,481,151.83 |
| The remittances to officers of the Quartermaster's Department at the general depots and elsewhere for the purchase and manufacture of clothing and equipage, and other expenditures chargeable to appropriations above named | $5,626,195.33 | |
| Requisitions issued on settlements made at Treasury of accounts and claims | 133,333.85 | |
| Total | | 5,759,529.18 |
| Leaving balance of | | 2,721,622.65 |

available in the Treasury of the United States on June 30, 1900, which will be further drawn upon to pay obligations entered into prior to the close of the fiscal year.

### REMITTANCES.

There were remitted to officers of the Department during the last fiscal year, from the available funds in the Treasury of the United States, on account of clothing and equipage, the following:

| | |
|---|---|
| Depot at Philadelphia, Pa | $2,722,628.94 |
| Depot at New York | 1,112,883.03 |
| Depot at San Francisco, Cal | 832,013.82 |
| Depot at Washington, D. C | 150,750.00 |
| Depot at Jeffersonville, Ind | 143,655.16 |
| Depot at St. Louis, Mo | 8,866.14 |
| Chief quartermaster, Department of the East (including Boston depot) | 114,389.21 |
| Chief quartermaster, Department of the Lakes (including Chicago depot) | 318,463.17 |
| Chief quartermaster, Division of the Philippines | 161,200.00 |
| Other departments, depots, posts, camps, and transports | 61,345.86 |
| Total | 5,626,195.33 |

### COLLECTIONS AND DISBURSEMENTS BY PAY DEPARTMENT.

The collections by the Pay Department from the enlisted men of the Army on account of clothing and equipage drawn in excess of their allowances from April 1, 1899 (the date referred to in my last annual report), to March 31, 1900, and which were placed to the credit of the appropriation for clothing and equipage, amounted to $251,683.67.

The money paid by said department to enlisted men of the Army upon their discharge from the service of the United States, from April 1, 1899, up to and including March 31, 1900, on account of clothing undrawn, amounted to $1,383,127.88.

Comparing these two items, it will be seen that the established clothing money allowance is ample.

### STATUS OF CLOTHING AND EQUIPAGE SUPPLIES.

The accompanying consolidated Statement A shows in detail the quantities of the various articles of clothing and equipage supplies on hand at the general depots of the Quartermaster's Department in the United States on July 1, 1899, the quantities purchased, manufactured, sold, and issued to the Army at home and for the troops stationed abroad, as well as the issues to the militia of the States and Territories, during the last fiscal year, and the quantities remaining on hand June 30, 1900.

Statement B shows in detail the quantities of clothing and equipage supplies on hand at the depots in Manila, Porto Rico, Cuba, and Hawaii July 1, 1899, the quantities purchased, sold, and issued to the troops in said islands during the last fiscal year, and the quantities available for issue on the 1st of July, 1900.

### PURCHASE AND MANUFACTURES.

The following is a résumé of the principal articles of clothing, equipage, and materials that were purchased and manufactured at the general depots during the past fiscal year:

#### IN THE UNITED STATES.

*Purchases.*

| | |
|---|---|
| Abdominal bands | 185,000 |
| Blankets, woolen | 16,946 |
| Blouses, lined and unlined | 14,402 |
| Boots: | |
| Calfskin pairs | 13,289 |
| Rubber do | 13,532 |
| Canvas fatigue coats | 46,910 |
| Canvas fatigue trousers, pairs | 46,910 |
| Caps: | |
| Forage | 12,205 |
| Muskrat | 4,730 |
| Collars, linen | 358,560 |
| Drawers, all kinds pairs | 542,005 |
| Gauntlets: | |
| Leather do | 26,305 |
| Muskrat do | 2,595 |
| Gloves, Berlin do | 753,204 |
| Hat cords | 363,121 |
| Hats: | |
| Campaign | 378,070 |
| Southwester | 13,124 |
| Helmets, cork | 166,740 |
| Khaki coats | 24,396 |
| Khaki trousers pairs | 27,906 |
| Leggings do | 377,403 |
| Overshoes, Arctic do | 7,257 |
| Ponchos, rubber | 69,192 |
| Pajamas | 15,598 |
| Shirts: | |
| Dark-blue flannel | 15,000 |
| Gingham and muslin | 60,000 |
| Chambray and nankeen | 493,619 |
| Shoes: | |
| Barrack pairs | 92,069 |
| Black and russet do | 713,513 |
| Shoe dressing pkgs | 142,032 |
| Slickers | 13,754 |
| Stockings, all kinds pairs | 726,883 |
| Summer coats | 163,464 |
| Summer trousers pairs | 168,604 |
| Trousers, kersey, all kinds | 32,657 |
| Undershirts, all kinds | 551,165 |
| Waist belts | 150,056 |
| Axes | 6,940 |
| Ax helves | 23,030 |
| Bedsacks | 10,000 |
| Bedsheets | 159,435 |
| Bedsteads, iron, with woven-wire bottoms | 3,859 |
| Books, all kinds | 6,300 |
| Brooms, corn | 46,612 |
| Brushes, scrubbing | 38,679 |
| Cots, field | 48,025 |
| Flags, all kinds | 4,380 |
| Hatchets | 22,900 |
| Hatchet helves | 25,400 |
| Mattresses | 9,890 |
| Mattress covers | 5,892 |
| Mosquito bars | 101,349 |
| Mosquito head nets | 34,000 |
| Pickaxes | 2,400 |
| Pickax helves | 21,012 |
| Pillows | 56,347 |
| Pillowcases | 94,723 |
| Shovels, long and short | 6,600 |
| Spades | 1,800 |
| Tents: | |
| Common | 4,000 |
| Hospital | 232 |
| Wall | 2,000 |
| Tent pins, all kinds | 1,212,383 |
| Trumpets | 3,504 |
| Buttons, all kinds | 24,796,544 |
| Drilling yards | 231,014 |
| Duck, bleached and brown, yards | 1,314,172 |
| Duck, tent yards | 1,320,659 |
| Flannel: | |
| Blouse do | 130,970 |
| Canton do | 188,893 |
| Shirting do | 440,983 |
| Jeans, corset and white, yards | 891,515 |
| Kersey yards | 464,217 |
| Khaki do | 2,497,849 |
| Lasting do | 52,253 |
| Napthaline pounds | 39,272 |
| Padding yards | 111,924 |
| Petroleum paper pounds | 36,000 |
| Silesia yards | 57,613 |
| Shirting, khaki do | 138,429 |

### *Manufactures.*

| Articles. | Depots. | | | |
|---|---|---|---|---|
| | Philadelphia. | Jeffersonville. | San Francisco. | New York. |
| Abdominal bands | 21,555 | | | |
| Blouses: | | | | |
| Made | 27,233 | 19,598 | 11,322 | |
| Unmade | 9,186 | 11,598 | 1,280 | |
| Canvas fatigue coats | 48,845 | 34,000 | | |
| Canvas fatigue trousers ... pairs | 65,385 | 65,032 | | |
| Caps, canvas | 3,555 | | | |
| Drawers, pairs | 21 | | 19,036 | |
| Dress coats | 1,621 | | 619 | |
| Khaki coats | 10,254 | | | 189,896 |
| Khaki trousers ... pairs | 10,710 | | | 337,896 |
| Mittens, canvas ... do | | 2,000 | | |
| Overalls ... do | 25,152 | 6,750 | | |
| Overcoats | 14,046 | | 181 | |
| Shirts, flannel | 159,804 | 60,064 | 27,128 | |
| Stable frocks | 22,702 | 3,400 | 1,058 | |
| Summer coats | 23,681 | | | |
| Summer trousers ... pairs | 37,091 | | | |
| Trousers, kersey: | | | | |
| Foot ... do | 35,551 | | 24,680 | |
| Mounted ... do | 23,145 | | 5,204 | |
| Barrack bags | 62,860 | 20,000 | | |
| Pillow cases | | | 1,800 | |
| Pillow sacks | 10,000 | | | |
| Tents: | | | | |
| Common | 4,331 | | | |
| Conical wall | 3,636 | [1] 4,018 | | |
| Hospital | 102 | | | |
| Shelter halves | 21 | | | |
| Wall | 696 | | | |

[1] At Washington.

## IN THE PHILIPPINES.

### *Purchases.*[1]

| | |
|---|---|
| Khaki coats | 62,643 |
| Khaki trousers ... pairs | 150,780 |
| White duck and drill clothing ... suits | 32,521 |
| White drill ... yards | 35,858 |
| Total value, United States currency | $220,718.91 |

Reports received indicate that no purchases of clothing and equipage supplies were made in Cuba, Porto Rico, and Hawaii.

## MANUFACTURES OF TENTS BY POST-OFFICE DEPARTMENT.

There were manufactured at the mail bag repair shop of the Post-Office Department, in this city, for this department, during the past fiscal year, 4,018 conical wall tents. All the materials required in their manufacture were furnished from the Philadelphia depot, or purchased by the depot quartermaster in this city. The cost of labor in making them amounted to $22,459.01.

As the demand for tentage from the Army has been reduced to a considerable extent, it was found that its manufacture in this city could be dispensed with, and consequently the Post-Office authorities were advised of such fact. The Department is now able to manufacture all the tents required at the Philadelphia depot.

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[1] Record of the entire year has not been furnished, due to change of purchasing officers.

### ISSUES TO THE ARMY.

The following are the quantities of the principal articles of clothing and equipage that were issued to the Army of the United States during the last fiscal year, viz:

### TO TROOPS STATIONED IN OR PRIOR TO THEIR DEPARTURE FROM THE UNITED STATES.

| | |
|---|---|
| Abdominal bands | 82,352 |
| Blankets, woolen | 74,119 |
| Blouses, lined and unlined: | |
| Made | 61,599 |
| Unmade | 20,051 |
| Canvas fatigue coats | 71,547 |
| Canvas fatigue trousers ..pairs.. | 71,195 |
| Caps, forage | 55,245 |
| Caps, muskrat | 11,598 |
| Collars, linen | 154,896 |
| Drawers, all kinds ......pairs.. | 437,252 |
| Gauntlets: | |
| Leather ..............do... | 34,161 |
| Muskrat ..............do... | 12,377 |
| Gloves, Berlin ............do... | 260,028 |
| Hats, campaign | 92,936 |
| Hat cords | 88,746 |
| Helmets, cork | 41,545 |
| Khaki coats | 54,055 |
| Khaki trousers..........pairs.. | 85,354 |
| Leggins, canvas ..........do... | 114,439 |
| Mittens, woolen..........do... | 26,467 |
| Overalls ..................do... | 7,690 |
| Overcoats, kersey, made | 24,703 |
| Overshoes, Arctic ........pairs.. | 29,616 |
| Ponchos, rubber | 69,045 |
| Shirts: | |
| Chambray and nankeen | 242,420 |
| Dark-blue flannel | 142,452 |
| Gingham and muslin | 42,937 |
| Shoes: | |
| Barrack ............pairs.. | 40,240 |
| Calfskin, black and russet, pairs | 248,101 |
| Stable frocks | 15,941 |
| Stockings, all kinds .....pairs.. | 456,014 |
| Summer coats | 47,870 |
| Summer trousers........pairs.. | 56,668 |
| Trousers: | |
| Foot, made..........pairs.. | 75,110 |
| Foot, unmade.........do... | 17,621 |
| Mounted, made ......do... | 17,300 |
| Mounted, unmade....do... | 9,836 |
| Undershirts, all kinds | 402,004 |
| Waist belts, leather | 64,134 |
| Axes | 7,077 |
| Ax helves | 16,177 |
| Barrack bags | 17,153 |
| Bedsacks | 47,007 |
| Bedsheets | 37,897 |
| Bedsteads, iron, with woven wire bottoms | 3,657 |
| Brooms, corn | 26,481 |
| Brushes, scrubbing | 20,880 |
| Chairs, barrack | 4,236 |
| Hatchets | 6,323 |
| Hatchet helves | 12,472 |
| Kettles, camp | 4,776 |
| Mattresses | 10,162 |
| Mattress covers | 12,418 |
| Mess pans | 9,879 |
| Mosquito bars | 40,608 |
| Mosquito headnets | 39,440 |
| Pickaxes | 4,477 |
| Pickax helves | 9,498 |
| Pillows | 12,633 |
| Pillowcases | 20,390 |
| Pillow sacks | 34,032 |
| Shovels, long and short | 5,827 |
| Tents: | |
| Common | 3,085 |
| Conical wall | 3,368 |
| Hospital | 636 |
| Shelter halves | 40,909 |
| Wall | 2,116 |
| Trumpets | 1,134 |

### TO TROOPS STATIONED IN THE PHILIPPINES, CUBA, PORTO RICO, AND HAWAII.

| | |
|---|---|
| Blankets, woolen | 31,752 |
| Blouses, made and unmade | 10,055 |
| Canvas fatigue coats | 9,884 |
| Caps, forage | 17,479 |
| Cap ornaments | 35,932 |
| Chevrons, all kinds | 42,082 |
| Collars, linen | 73,875 |
| Drawers, all kinds | 310,681 |
| Gauntlets, leather | 24,565 |
| Gloves, Berlin | 165,903 |
| Hats, campaign | 148,395 |
| Hat ornaments | 118,721 |
| Hat cords | 92,745 |
| Helmets, cork | 27,489 |
| Khaki coats | 59,673 |
| Khaki trousers | 261,148 |
| Leggins .................pairs.. | 198,883 |
| Overalls | 10,316 |
| Pajamas | 11,808 |
| Ponchos, rubber | 38,122 |
| Shirts, all kinds | 584,241 |
| Shoes, all kinds | 293,291 |
| Shoe dressing .......packages.. | 21,894 |
| Stable frocks | 10,651 |
| Slickers, all kinds | 8,851 |
| Stockings, all kinds | 625,917 |
| Summer coats | 20,702 |
| Suspenders | 19,501 |

| | | | |
|---|---|---|---|
| Trousers, kersey and summer | 101,585 | Mattresses | 10,628 |
| Canvas fatigue trousers | 33,362 | Mattress covers | 32,590 |
| Waist belts, leather | 18,322 | Mosquito bars and headnets | 115,018 |
| Axes | 4,198 | Pickaxes and helves | 8,430 |
| Ax helves | 10,449 | Pillows, etc | 41,586 |
| Barrack bags | 9,003 | Shovels | 6,516 |
| Bed sheets | 71,025 | Tents: | |
| Bedsteads, with woven-wire bottoms | 20,745 | Common | 1,638 |
| Books, all kinds | 3,830 | Conical wall | 243 |
| Brooms, corn | 30,978 | Hospital | 2,426 |
| Brushes, scrubbing | 19,072 | Shelter halves | 13,225 |
| Chairs, barrack | 6,788 | Wall | 569 |
| Cots | 42,366 | Tent pins, all kinds | 259,436 |
| Hatchets and helves | 5,348 | Tent poles, all kinds | 23,925 |
| | | Trumpets | 2,203 |

### CLOTHING AND EQUIPAGE SUPPLIES FOR TROOPS IN ALASKA.

The troops ordered to duty in Alaska have been fully equipped for Arctic service. They were furnished, in addition to their regulation winter clothing, with the following articles, viz:

Southwester hats.
Fur caps.
Fur gauntlets.
Mackinaw overcoats.
Oilskin coats.
Oilskin trousers.
Buckskin gloves.
Buckskin mittens.
Moccasins.
German socks.
Shoe pacs.
Sweaters.

The cost of this extra supply of clothing, per man, was about $30, and, upon the recommendation of this office, the Secretary of War has authorized the above sum to be added to the already established allowance of each of the enlisted men serving in the Department of Alaska.

### CLOTHING AND EQUIPAGE SUPPLIES FOR TROOPS IN CHINA.

Although not pertaining to the operations of the Quartermaster's Department for the last fiscal year, nevertheless it is deemed to be of sufficient importance to give the matter of the supply of clothing and equipage for the troops of the United States, ordered to or expected to be stationed in China, a passing notice.

There were sent to the depot at Taku, China, from the depot at San Francisco, the following:

| | | | |
|---|---|---|---|
| Wool blankets | 16,000 | Stockings: | |
| Blouses, lined | 16,000 | Cotton, heavy ........do | 44,000 |
| Caps: | | Wool, heavy ........do | 36,000 |
| Canvas | 10,000 | Trousers: | |
| Fur | 4,000 | Kersey, foot, heavy ...do | 16,000 |
| Assortment of chevrons. | | Mounted, kersey, heavy pairs | 4,500 |
| Canton flannel drawers..pairs | 40,000 | Trousers stripes, assorted. | |
| Gauntlets, fur ........do | 10,000 | Undershirts, wool, heavy | 27,000 |
| Gloves, wool ........do | 22,000 | Overcoats, canvas | 2,000 |
| Hats, campaign | 12,000 | Hat cords | 17,400 |
| Overcoats: | | Conical wall tents, complete for commissary department | 5 |
| Artillery | 1,500 | Hospital tents, complete for commissary department | 3 |
| Cavalry | 3,500 | Wall tents, complete for commissary department | 5 |
| Infantry | 11,000 | Hospital tents, complete for medical department | 250 |
| Overshoes: | | Asbestus tent rings | 3,000 |
| Arctic, one-buckle ..pairs | 11,000 | | |
| Standard ........do | 5,000 | | |
| Ponchos | 12,000 | | |
| Shirts, dark blue flannel | 25,000 | | |
| Shoes, black calfskin ....pairs | 20,000 | | |

| | |
|---|---|
| Tent stoves | 1,400 |
| Joints, tent stovepipe | 7,000 |
| Veto stoves and extra parts for use with conical tents | 1,000 |
| Fire pots, with grates, rings, and legs, arranged for consuming coal in conical tent stoves | 1,505 |
| Axes | 1,000 |
| Ax helves | 3,000 |
| Hatchets | 1,000 |
| Hatchet helves | 3,000 |
| Camp kettles | 500 |
| Mess pans | 1,000 |
| Pickaxes | 500 |
| Pickax helves | 1,000 |
| Shovels: | |
| Long handle | 500 |
| Short handle | 500 |
| Spades | 400 |
| Tents: | |
| Common, complete | 500 |
| Conical, complete | 500 |
| Hospital, complete | 150 |
| Wall, complete | 200 |

| | |
|---|---|
| Tent pins: | |
| Large, extra | 3,000 |
| Small, extra | 15,000 |
| Hand litters | 100 |
| Wall tents for medical department | 50 |
| Mosquito bars | 6,000 |
| Extra grates and legs for fire pots ... each | 250 |
| Buckskin gauntlets ... pairs | 3,000 |
| Iron tent pins: | |
| Large | 6,000 |
| Small | 1,000 |
| German socks ... pairs | 5,000 |
| Overcoats for hospital corps | 545 |
| Cloth chevrons for hospital corps ... pairs | 100 |
| Brassards for hospital corps | 50 |
| Trousers stripes for hospital corps ... pairs | 575 |
| Bed sacks | 6,000 |

Also such number of hospital flags, camp colors, and ambulance guidons as deemed necessary.

The above includes 250 hospital and 50 wall tents for the exclusive use of the Medical Department.

According to cable advices, there were also sent to Taku, from the available supplies at Manila, unlined blouses; trousers, foot, kersey; cotton stockings and wool undershirts sufficient for 5,000 troops; also 1,000 pairs drawers.

In addition to the foregoing, there were also shipped to Nagasaki, for use of the medical department, 200 complete hospital tents and sufficient clothing for use of enlisted men of the hospital corps.

The climate of that part of China in which the United States troops were expected to operate being very cold in winter, special precautions were taken to provide an adequate supply of extra-warm clothing and heating stoves. Considering that the regulation conical-tent stoves are adapted only to burning wood, and owing to the reported scarcity of this class of fuel in the country referred to, this office devised a cast-iron fire pot and grate, suitable for soft coal, to be placed inside of the conical-tent stove. Experiments with Japanese coal demonstrated that the same answered the purpose fully. Fifteen hundred of these pots have been procured and ordered to be shipped. It is believed that the fire pot, an illustration of which is submitted herewith, will in the future prove a valuable adjunct to the equipment of the Army.

### ISSUES TO THE MILITIA.

There were issued to the governors of the several States and Territories and to the commanding general District of Columbia militia, under the provisions of the act of Congress of July 1, 1887, making an annual appropriation for the support of the militia of the States, etc., articles of clothing, equipage, and other quartermaster stores, for which the several appropriations of the Quartermaster's Department have been reimbursed, viz:

| States and Territories. | Clothing and equipage. | Regular supplies. | Total. |
|---|---|---|---|
| Alabama | $7,570.55 | | $7,570.55 |
| Arizona | 646.40 | $16.74 | 663.14 |
| Arkansas | 1,240.15 | | 1,240.15 |
| California | 9,857.40 | | 9,857.40 |
| Colorado | 2,772.32 | | 2,772.32 |
| Connecticut | 1,026.00 | | 1,026.00 |
| Delaware | 1,155.98 | | 1,155.98 |
| District of Columbia | 4,573.45 | | 4,573.45 |
| Florida | 4,887.35 | | 4,887.35 |
| Georgia | 23,580.97 | | 23,580.97 |
| Idaho | 3,703.85 | | 3,703.85 |
| Illinois | 1,706.46 | | 1,706.46 |
| Indiana | 6,586.11 | | 6,586.11 |
| Iowa | 5,846.63 | | 5,846.63 |
| Kansas | 7,075.14 | | 7,075.14 |
| Kentucky | 3,278.26 | | 3,278.26 |
| Louisiana | 7,184.19 | | 7,184.19 |
| Maine | 208.74 | | 208.74 |
| Maryland | 7,751.80 | 396.00 | 8,147.80 |
| Massachusetts | 11,655.15 | | 11,655.15 |
| Michigan | 18,040.88 | | 18,040.88 |
| Minnesota | | | |
| Mississippi | 4,865.44 | | 4,865.44 |
| Missouri | 25,444.78 | 99.96 | 25,544.74 |
| Montana | | | |
| Nebraska | 6,399.38 | 462.00 | 6,861.38 |
| Nevada | | | |
| New Hampshire | 2,337.94 | | 2,337.94 |
| New Jersey | 153.42 | | 153.42 |
| New Mexico | 1,684.06 | 7.86 | 1,691.92 |
| New York | | | |
| North Carolina | 3,307.25 | | 3,307.25 |
| North Dakota | 2,166.85 | | 2,166.85 |
| Ohio | 16,792.05 | | 16,792.05 |
| Oklahoma | 2,421.45 | 81.00 | 2,502.45 |
| Oregon | | | |
| Pennsylvania | 13,499.80 | | 13,499.80 |
| Rhode Island | | | |
| South Carolina | 5,497.08 | | 5,497.08 |
| South Dakota | 2,240.88 | | 2,240.88 |
| Tennessee | 4,324.53 | | 4,324.53 |
| Texas | 22,067.82 | | 22,067.82 |
| Utah | | | |
| Vermont | 15,380.05 | | 15,380.05 |
| Virginia | 14,016.69 | | 14,016.69 |
| Washington | 2,836.00 | | 2,836.00 |
| West Virginia | 2,820.87 | | 2,820.87 |
| Wisconsin | 4,158.50 | 8.23 | 4,166.73 |
| Wyoming | 2,562.19 | | 2,562.19 |
| Total | 285,324.81 | 1,071.79 | 286,396.60 |

There were also issued to the commanding general District of Columbia militia, during the fiscal year ended June 30, 1900, under the act of Congress approved March 1, 1889, and for which this Department will not be reimbursed, the following quartermaster's supplies, viz:

| | |
|---|---|
| Clothing and equipage | $3,982.12 |
| Regular supplies | 463.03 |
| Total | 4,445.15 |

## SALES TO THE MILITIA.

Under the act of Congress approved February 24, 1897, the Department is authorized to sell to the governors of the States and Territories such supplies as the Secretary of War may authorize, provided the same can be spared. Under this authority there were sold during the past fiscal year, at the regulation prices for cash, clothing and equipage supplies to the following amounts:

| State. | Clothing and equipage. | Packing charges. | Total. |
|---|---|---|---|
| California | $450.00 | $0.54 | $450.54 |
| Georgia | 106.41 | | 106.41 |
| Idaho | 387.76 | 1.08 | 388.84 |
| Nebraska | 3.66 | | 3.66 |
| New Hampshire | 152.00 | 1.69 | 153.69 |
| Pennsylvania | 3,010.50 | 8.88 | 3,019.38 |
| Total | | | 4,122.52 |

Under the act of Congress approved March 15, 1898, the cost of all stores and supplies sold to any State or Territory is credited to the appropriation from which they were procured, thereby enabling the Department to replace the supplies.

### RETURN TO THE STATES AND TERRITORIES OF QUARTERMASTER'S SUPPLIES, CARRIED BY VOLUNTEERS INTO THE UNITED STATES SERVICE DURING THE WAR WITH SPAIN.

The act of Congress making appropriation for the support of the Regular and Volunteer Army for the fiscal year 1900–1, authorizes the Secretary of War, on application of the governor of any State or Territory, to replace the Quartermaster's supplies which the volunteers from said State or Territory carried into the service of the United States Army during the recent war with Spain and which have been retained by the United States, exclusive of such supplies as have been allowed for in the office of the Auditor for the War Department and such award accepted by a State.

In order that the intent of the act of Congress quoted may be fully determined, so that a uniform adjustment of the several claims arising thereunder may be made, the Secretary of War, upon the recommendation of this office, on the 18th of June, 1900, obtained the following opinion from the Judge-Advocate-General of the Army upon the matter, which was approved by the Secretary of War on the day following, viz:

1. That the act applies not only to stores brought into the United States service by volunteers from supplies furnished the States or Territories under the annual militia appropriation, but also supplies purchased by the States and Territories for which no claim has been allowed and accepted.
2. The act authorizes the property to be replaced, article for article, irrespective of its condition at the time it was accepted into the service of the United States.
3. The act does not require the article to be strictly new, but that issues can be made of tentage which has been used somewhat, but is still in a perfectly serviceable condition.

Several claims have already been presented, and after correspondence with the Auditor for the War Department and verification of the items claimed by comparison with the property returns on file in this office, the Secretary of War has authorized settlement in accordance with existing facts.

A complete statement regarding the settlement of this class of claims, as they may arise from time to time, will form part of the next annual report of the clothing-supply branch.

### CLOTHING FOR DISCHARGED PRISONERS.

There were remitted during the last fiscal year, to various officers, under the act of Congress approved March 16, 1896, the sum of $7,395 for the purpose of furnishing one suit of outer clothing to each discharged prisoner, upon release from confinement, under sentence of a general court-martial, at a cost of not to exceed $10 per suit.

### ISSUES TO INDIAN PRISONERS OF WAR.

This Department supplies to the Apache Indian prisoners of war (men, women, and children), kept at Fort Sill, Okla., under military jurisdiction, such articles of clothing and other quartermaster's supplies as are necessary for their well-being. The value of the stores of all kinds furnished is as follows:

| | |
|---|---|
| Clothing and equipage | $4,930.14 |
| Regular supplies | 3,618.37 |
| Army transportation | 746.00 |
| Incidental expenses | 1,200.00 |
| Total | 10,494.51 |

### SALES TO GEOLOGICAL SURVEY.

There were transferred to the Director of the United States Geological Survey, under the provisions of section 3692 of the Revised Statutes, for use by surveying parties in the field, under authority of the Secretary of War, tents to the value of $232.04, for which the Department has been reimbursed.

### SALES OF CONDEMNED CLOTHING AND EQUIPAGE.

There was realized from sales at the general depots of this Department, of condemned clothing, equipage, and cuttings, during the past fiscal year, the sum of $57,177.24. The expenses of the sales amounted to $465.91, which deducted from the gross receipts net the sum of $56,701.33, which was covered into the Treasury of the United States, credited to miscellaneous receipts.

### SALES TO NAVY DEPARTMENT AND UNITED STATES MARINE CORPS.

At the request of the Navy Department, and with the approval of the Secretary of War, there were sold to said Department, in connection with the equipment of United States ships, ponchos, tents, etc., to the value of $4,100.61.

Sales of hats and other articles of clothing and equipage supplies to the value of $485 were also made to the quartermaster of the United States Marine Corps, required for immediate use of troops in the Philippines.

### TRANSFER OF EQUIPAGE TO NATIONAL HOME FOR DISABLED VOLUNTEERS.

There were transferred to the governor of the National Home for Disabled Volunteers, at Hampton, Va., in August, 1899, during the prevalence of the yellow fever epidemic, certain tents and mattresses, of which the following were not returned, viz:

| | |
|---|---|
| Hospital tents | 200 |
| Common tents | 150 |
| Mattresses | 389 |

The tents when transferred were not in an entirely new condition. The money value of the property, as determined, was $5,363.30, and this amount has been placed to the credit of the Treasurer of the United States by the president of the Board of Managers of the National Home for Disabled Volunteers.

### CLOTHING AND EQUIPAGE SUPPLIES.

The supplies procured during the past fiscal year, it is confidently believed, have been of a quality conforming to standards and specifications. The greatest care has been exercised to bring about this result. All the demands made upon the Department were promptly met. A constant vigilance is being exercised to replenish stock whenever necessary, and all accumulation of articles not likely to be needed is carefully guarded against.

### INSPECTION OF CLOTHING AND EQUIPAGE SUPPLIES RECEIVED UNDER CONTRACTS.

With the largely increased purchases of supplies under contracts, and the demands of merchants and manufacturers residing in the East and West, it has been decided, as far as the interests of the public service warrant, to establish subpurchasing depots in the cities of Boston and Chicago, in addition to those in the cities of Philadelphia, New York, and San Francisco.

As matters now stand proposals for Eastern deliveries are principally invited at the Philadelphia, Boston, and Chicago depots. Care is taken to fully acquaint prospective bidders with the character and quality of the goods advertised for. Bids are opened simultaneously at the three depots named, so that the competition must absolutely be a fair one, and awards are made to the lowest responsible bidders, regardless of place of delivery. No charge of discrimination against bidders residing in different sections of the country can therefore be sustained against this Department.

The supplies for the troops on the Pacific coast, and also considerable quantities for shipment to troops in the Philippines and China are procured in the city of San Francisco, from time to time, as demands and circumstances require.

While the purchases were principally confined to the Philadelphia and San Francisco depots, no difficulties in the inspection of the goods by the well-organized corps of inspectors were encountered. But the sudden change from two to five depots necessitated a reorganization of the entire inspection department, which is now in progress.

There is no question but that the inspection at our depots must be uniform in every respect. An article rejected for good and sufficient reason at one depot should not be accepted if offered at another. At present samples of deliveries made at Chicago and Boston are sent to the Philadelphia depot for examination by the experts there. This course, as will readily be seen, involves great delays to which contractors should not be subjected. The latter can not be held to a proper fulfillment of the terms of delivery agreed upon.

These difficulties must be overcome, and I see no other remedy than to create a separate inspection department, to be placed under the direct control of this office.

Inspectors representing the various industries, such as leather, woolen and cotton textile fabrics, knit goods, iron products, tentage, etc., should have an expert representative on duty in this office under the direct control of the Quartermaster-General.

A corps of experienced inspectors, carefully selected, should be placed under the supervision of these experts, and ordered from depot to depot wherever their services are required. No inspector should remain on duty at any one depot for an indefinite length of time.

I believe that if this suggestion is in principle carried out, the interests of both the Government and contractors will be greatly promoted. The details may well be left to a board of officers to be specially appointed to consider this most important matter. The necessary rules and regulations to govern the inspection department of this office should also be prescribed by said board.

## IMPROVEMENTS AND CHANGES IN THE UNIFORM.

### WHITE SUMMER CAPS FOR OFFICERS.

Heretofore the white summer caps prescribed for officers were made according to the fancy of each individual manufacturer. In many cases lightness was entirely lost sight of. To remedy this a pattern cap, of lightest possible construction, was prepared by direction of this office, consisting of a skeleton frame and suitable covers. To make the cap more attractive, provision was made for cap cords, to be worn as follows:

General officers, of gold lace, about ⅜-inch wide.
Officers of the general staff and staff corps, of gold bullion, ⅛-inch diameter.
Officers of the line, of silk, ⅛-inch diameter, of color of arm of service.

The Secretary of War having approved this sample, it has been adopted as the standard of the Army.

### INSIGNIA FOR REGIMENTAL, SQUADRON, AND BATTALION STAFF OFFICERS.

Under existing regulations the staff officers of regiments, squadrons, and battalions can not be distinguished from company and other officers of regiments.

This office therefore directed the preparation of suitable insignia to be worn on the undress and khaki coats of the officers referred to, which, it is thought, would fully accomplish the object sought.

After consideration by the equipment board, the Secretary of War, upon the recommendation of this office, approved these insignia, which consist of the regulation crossed rifles, sabers, and cannon, with the numbers of the respective regiments in the upper angle and the devices of the respective staff corps (shield for adjutants, wheel surmounted by an eagle for quartermasters, and crescent for commissaries) in the lower angle. In the case of adjutant and quartermaster of the battalion of engineers the insignia to be above the center turret.

Standard samples have been prepared, and draft of a general order submitted for promulgation.

### KHAKI CLOTHING.

Since submitting my last annual report, the quality of the khaki material for field uniforms has been greatly and steadily improved. A new standard, and specifications conforming thereto, have been adopted. It is of domestic production, possesses great strength, is water-repellent, and the dye is fast and stands the prescribed tests, such as exposure to sunlight, boiling in solutions of soap and carbonate of soda, and steeping in peroxide of hydrogen 10 volumes strength.

Constant improvements have also been made in the manufacture of the khaki coats and trousers, and it is believed that they are as near perfect as they can be produced, both as to fit and workmanship. The attention of this office having been called to the advisability of supplying the mounted troops stationed in tropical countries with

### RIDING BREECHES,

samples were made and referred to the officers on duty at Fort Myer, Va., for an expression of opinion. Report was made that nearly all the officers and men recommended their adoption. Upon reference of the matter to the Secretary of War, authority was granted to manufacture sufficient of these trousers to equip six troops of cavalry, for trial in active service, the question of final adoption to depend upon reports upon the result of said trial. Five hundred and eighty-seven pairs of these breeches have been manufactured at the New York depot, and are about ready for distribution.

### LEGGINGS.

New specifications, providing that the leggings hereafter to be procured shall be of fast khaki color, of same shade as the khaki coats and trousers, have also been adopted.

### KHAKI SHIRTS.

On the 21st day of September, 1899, the first steps were taken by this office to provide khaki-colored cotton shirts in lieu of the chambray shirts heretofore procured. Samples were submitted to the Secretary of War, who, on the 10th of January last, authorized the change. A supply of shirting material has since been contracted for and manufactures commenced.

### DARK BLUE FLANNEL SHIRTS.

The attention of the Department having been called to the fact that the dark blue flannel shirts, when worn in campaign, offered a very conspicuous mark to the enemy, some of the khaki-colored cotton shirts have been sent to Fort Myer, Va., where experiments are about to be conducted, both as to distances, light, and weather conditions. Should it be found that the dark blue color is really objectionable, steps will be taken at once to adopt wool flannel shirts of khaki color. It is believed that no difficulty in securing an all-wool flannel of fast color will be experienced.

### BELT STRAPS FOR TROUSERS.

With the adoption of leather waist belts it has become necessary to provide all the kersey trousers hereafter to be issued with suitable belt straps.

### LEATHER GLOVES FOR ARTILLERYMEN.

The attention of this Department having been called to the necessity of providing the enlisted men of the artillery arm serving in seacoast defenses with suitable leather gloves to protect their hands while handling the heavy guns, machines, and appliances, samples of gloves were procured, and after consultation with the Chief of Ordnance of the Army the Secretary of War, to whom the case was submitted, authorized the procurement and issue of asbestus horsehide gloves, cost price to be charged to the enlisted men, without, however, increasing their clothing-money allowance.

### STRAW HELMETS.

Under existing regulations the enlisted men of the Army are permitted to wear, during the warm season, on fatigue and stable duty, at target practice and when not on duty, straw hats of such pattern as may be prescribed by department commanders. It having been reported that the foregoing resulted in a lack of uniformity, a limited number of straw helmets, costing 25 cents each, were procured and issued to some of the troops at a few of the southern stations in the United States. Reports indicate that these helmets do not seem to meet with favor.

### NANKEEN UNDERWEAR.

Demands from Manila for nankeen undershirts and drawers necessitated the continued purchase of these articles, and in order to bring about uniformity of purchases in the East as well as on the Pacific coast this office adopted standards and specifications.

### CHEVRONS FOR SHIRTS.

The clothing regulations permit the wearing of chevrons by noncommissioned officers on the sleeves of their shirts. Neat and suitable samples have also been adopted and a limited supply has been ordered to be manufactured. The Department is now ready to supply the same whenever called for.

### CLOTHING FOR THE TRANSPORT SERVICE.

The Quartermaster's Department furnishes to such of the officers and enlisted men of the United States Army transport service as may desire to avail themselves thereof such of the prescribed uniform clothing of said service, at cost prices, to be deducted from their pay, as they may need.

As these supplies must be bought either at the New York or San Francisco depot it was found necessary to secure sets of each article, so that the purchases may be uniform. Samples have been adopted and are about to be distributed to the depots named.

### KHAKI-COLORED DUCK FOR TENTS.

Experiments have been made with duck for tents by having a quantity dyed of same shade as the khaki material. A tent made therefrom was erected in January last. It has been exposed to snow, rain, and sunshine, and after nine months it is found that the tent has retained its color, is still good, strong, and fit for service, and that not a sign of mildew has made itself manifest. It has therefore been decided that the duck needed for future manufactures of tents shall conform to this color and be of the same fast dye.

### MUNSON'S IMPROVED TENTS.

Capt. Edward L. Munson, assistant surgeon, U. S. A., having invented and patented a hospital tent specially adapted for service in tropical countries, this Department, by authority of the Secretary of War, manufactured for trial in active service 100 of these tents, nearly all of which have been distributed.

A few reports have thus far been received which indicate that the tents are more comfortable than the regulation hospital tent. Captain Munson has waived payment of royalty or other remuneration on any tents that have been or may hereafter be constructed for use of the United States Army.

### LAY FIGURES EXHIBITING KHAKI FIELD UNIFORMS.

Orders have been given to construct a group of four figures showing to the visitors of the War Department building the khaki and field uniforms and equipments of our Army in the Philippines. A similar group will also be procured for exhibit in the clothing museum of the Philadelphia depot.

### ILLUSTRATIONS OF ARMY UNIFORMS.

Steps have also been taken to procure additional illustrations of the uniforms of the Army, so as to bring the work containing the illustrations from 1774 up to date. These illustrations will consist of one plate, showing the present undress uniform of officers and enlisted men; one plate will illustrate the khaki field uniform of officers and another plate will show the khaki field uniform of the enlisted men. It is the intention to produce these plates in the same artistic manner as those heretofore published.

### OAK TANNAGE.

Manufacturers of leather on the Pacific coast having called the attention of the Department to their product known as California oak and asked that the same be placed on an equal footing with leather of Eastern oak-bark tannage, this Department has willingly undertaken the task of ascertaining the relative merits of these two tannages.

The standard sample shoes which were manufactured in the East are made exclusively of leather tanned with Eastern oak bark, and bidders on the Pacific coast could not, therefore, submit bids upon shoes made of leather tanned with California oak bark.

Upon investigation it was ascertained that Eastern manufacturers strongly advised against the use of California oak leather, pointing out that its wearing qualities were inferior to that of the Eastern product, and that, on account of its red color, it would be dangerous to permit its use in view of the difficulty in distinguishing the same from hemlock or union (hemlock and oak) leather.

The latter reason should not be considered, inasmuch as the Department is fully able to protect itself from fraud. In order to ascertain the wearing qualities of California oak-tanned leather this Department has authorized the manufacturers in San Francisco, to whom contracts for furnishing 75,000 pairs of shoes were recently awarded, to use the California product. Actual service will soon demonstrate whether the adverse criticism is based upon facts.

One hundred pairs of California oak-tanned shoes have also been sent from San Francisco to West Point, N. Y., where they will be submitted to a careful comparative service test. Other experiments are also in progress, and the subject will receive an exhaustive investigation.

### CONCLUSION.

The clerical work connected with the clothing-supply branch has been kept up to date, due to a faithful performance of duty on the part of the clerical force, which is composed of six clerks.

Very respectfully,

W. S. PATTEN,
*Quartermaster, U. S. A.*

The QUARTERMASTER-GENERAL, U. S. A.

A.—*Statement showing articles of clothing and equipage and material on hand at the issuing depots of the Quartermaster's Department June 30, 1899; the quantities purchased, manufactured, received from posts and depots, taken up, sold, transferred to general depots, expended, issued to the Army and the militia, and the quantities remaining in depots June 30, 1900.*

| Articles. | On hand June 30, 1899. | Purchased. | Manufactured. | Received from general and sub depots. | Received from posts. | Gained. | Total received. | Sold. | Transferred to general and sub depots. | Expended or dropped. | Issued. | | | Remaining on hand June 30, 1900. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | To the militia. | To the Army. | Total. | |
| Abdominal bands | 37,202 | 185,000 | 21,555 | 2 | 756 | | 244,515 | 2 | 1,503 | 1 | | 82,352 | 83,858 | 160,657 |
| Aiguilletes and shoulder knots (sets) | 1,938 | 56 | | | 73 | | 2,067 | | 28 | | | 16 | 44 | 2,023 |
| Blankets, woolen | 154,289 | 16,946 | | 105,754 | 1,073 | 750 | 278,812 | 276 | 85,666 | 1,310 | 9,490 | 74,119 | 170,861 | 107,951 |
| Blouses, lined and unlined: | | | | | | | | | | | | | | |
| Made | 202,660 | 14,402 | 58,153 | 36,894 | 2,714 | 11,801 | 326,624 | 77 | 8,922 | 80 | 16,892 | 61,599 | 87,570 | 239,054 |
| Unmade | 1,363 | | 22,064 | 43 | 66 | | 23,536 | 9 | 2,000 | 2 | 150 | 20,051 | 22,212 | 1,324 |
| Boot pacs ... pairs | | 1,621 | | | | | 1,621 | | | | | 1,621 | 1,621 | |
| Boots: | | | | | | | | | | | | | | |
| Calfskin ... do | 9,749 | 13,289 | | 8 | 84 | 48 | 23,178 | 42 | 711 | 7 | | 3,322 | 4,082 | 19,096 |
| Rubber ... do | 444 | 13,532 | | | | 4,186 | 18,162 | | 9,692 | | | 8,470 | 18,162 | |
| Canvas fatigue coats | 79,201 | 46,910 | 82,845 | 8,093 | 3,267 | 2,283 | 222,599 | 65 | 11,113 | 829 | 3 | 71,547 | 83,557 | 139,042 |
| Canvas fatigue trousers ... pairs | 51,944 | 46,910 | 130,417 | 10,118 | 3,319 | 1,191 | 243,899 | 19 | 45,451 | 715 | 4 | 71,195 | 117,384 | 126,515 |
| Caps: | | | | | | | | | | | | | | |
| Canvas | 4,818 | | 3,555 | 2,516 | 475 | | 11,364 | 12 | 3,000 | 73 | | 3,171 | 6,256 | 5,108 |
| Forage | 104,749 | 12,205 | | 46,766 | | 675 | 164,395 | 14 | 27,666 | 72 | 11,748 | 55,245 | 94,745 | 69,650 |
| Muskrat | 10,818 | 4,730 | | 6,222 | 62 | 353 | 22,185 | 35 | 5,897 | 26 | 1 | 11,598 | 17,557 | 4,628 |
| Wild-cat | | 150 | | | | | 150 | | | | | 150 | 150 | |
| Cap ornaments, new pattern | 28,611 | 19,466 | | | 25 | | 48,102 | | 21,700 | 12 | | 10,523 | 32,235 | 15,867 |
| Chevrons: | | | | | | | | | | | | | | |
| Cloth ... pairs | 36,787 | 7,018 | 60,532 | 21,068 | 673 | 3,158 | 129,236 | 1,089 | 15,411 | 659 | 3,654 | 38,037 | 58,850 | 70,886 |
| Gold lace ... do | 3,704 | | 9,079 | | 951 | 26 | 13,760 | 299 | 81 | 29 | | 7,614 | 8,023 | 5,737 |
| Khaki ... do | 164 | 24,781 | 88,770 | | 29 | 15 | 113,709 | | 74,616 | 3,276 | | 14,086 | 91,978 | 21,731 |
| Coats: | | | | | | | | | | | | | | |
| Mackinaw | 1 | 1,272 | | | | | 1,273 | | | | | 1,180 | 1,180 | 92 |
| Oilskin | | 2,180 | | | | | 2,180 | | | | | 2,180 | 2,180 | |
| Uniform dress— | | | | | | | | | | | | | | |
| Made | 23,697 | | 2,151 | 725 | 1,899 | 1,696 | 30,168 | 46 | 784 | 1 | | 3,897 | 4,738 | 25,430 |
| Unmade | 2,133 | | 89 | | 206 | | 2,428 | 19 | 5 | 23 | | 100 | 147 | 2,281 |
| Coat facings ... sets | 5,225 | | 53 | | 134 | 61 | 5,473 | 539 | 65 | | | 156 | 760 | 4,713 |
| Collars, linen | 138,405 | 358,560 | | 70,580 | 531 | 200 | 568,276 | 26 | 133,460 | 114 | | 154,896 | 288,496 | 279,780 |
| Drawers, all kinds ... pairs | 890,235 | 542,005 | 19,057 | 194,531 | 5,726 | 22,203 | 1,673,757 | 362 | 515,197 | 18,225 | | 437,252 | 971,036 | 702,721 |
| Field uniform coats | 2,777 | | | 1,775 | | | 4,552 | 119 | | | | 20 | 139 | 4,413 |
| Field uniform trousers ... pairs | 7,687 | | | 35,706 | | | 43,393 | 245 | 6,220 | | | 3,115 | 9,580 | 33,813 |
| Gauntlets: | | | | | | | | | | | | | | |
| Leather ... do | 47,124 | 26,305 | | 17,451 | 170 | 290 | 91,340 | 451 | 22,708 | 78 | 617 | 34,161 | 58,015 | 33,325 |
| Muskrat ... do | 24,078 | 2,595 | | 12,425 | | | 39,098 | 15 | 12,425 | 592 | 1 | 12,377 | 25,410 | 13,688 |

A.—*Statement showing articles of clothing and equipage and material on hand at the issuing depots of the Quartermaster's Department June 30, 1899; the quantities purchased, etc.*—Continued.

| Articles. | On hand June 30, 1899. | Purchased. | Manufactured. | Received from general and sub depots. | Received from posts. | Gained. | Total received. | Sold. | Transferred to general and sub depots. | Expended or dropped. | Issued. | | | Remaining on hand June 30, 1900. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | To the militia. | To the Army. | Total. | |
| Gloves: | | | | | | | | | | | | | | |
| Berlin ............pairs.. | 17,163 | 753,204 | | 150,198 | 13,454 | 955 | 934,974 | 136 | 310,419 | 72 | 11,361 | 260,028 | 582,016 | 352,958 |
| Buckskin............do.... | | 2,650 | | | | | 2,650 | | | 1 | | 2,483 | 2,484 | 166 |
| Woolen............do.... | 38,385 | | | 2,260 | | | 40,645 | 6 | | | | 4,145 | 4,251 | 36,394 |
| Hats: | | | | | | | | | | | | | | |
| Campaign.................. | 67,989 | 378,070 | | 89,096 | 945 | 696 | 536,796 | 240 | 252,788 | 638 | 14,127 | 92,936 | 360,729 | 176,067 |
| Canvas.................. | 124 | | | 20,122 | | | 20,246 | 775 | 13 | | | | 788 | 19,458 |
| Southwester .................. | | 13,124 | | | 300 | | 13,424 | | 10,944 | | | 2,180 | 13,124 | 300 |
| Hat cords .................. | 13,814 | 363,121 | | 9,700 | 766 | 182 | 387,583 | 13 | 237,767 | 31 | 3,800 | 88,746 | 330,357 | 57,226 |
| Hat ornaments.................. | 1,731,874 | 11,525 | | 2,448 | 16,236 | | 1,762,083 | 2 | 780,526 | | 2,575 | 187,395 | 970,498 | 791,585 |
| Helmets: | | | | | | | | | | | | | | |
| Cork .................. | 21,577 | 166,740 | | 31,980 | 541 | 1,514 | 222,352 | 82 | 22,724 | 20 | | 41,545 | 64,371 | 157,981 |
| Untrimmed .................. | 25,376 | 706 | | 11,051 | 960 | 144 | 38,237 | 20 | 11,111 | 19 | 40 | 3,042 | 14,232 | 24,005 |
| Helmet cords and bands.......... | 15,010 | 42,156 | | 1,250 | 110 | 6 | 58,532 | | 1,272 | | | 1,310 | 2,580 | 55,952 |
| Helmet eagles .................. | 39,423 | | | 2,500 | 1,671 | | 43,594 | 4 | 2,560 | 1,860 | 14 | 4,929 | 9,367 | 34,227 |
| Helmet eagle devices .................. | 4,638 | 250 | | 150 | | 3,050 | 8,088 | | 151 | | | 243 | 394 | 7,694 |
| Helmet hair plumes .................. | 12,592 | | | 700 | 116 | 121 | 13,529 | | 720 | 1 | | 1,171 | 1,892 | 11,637 |
| Helmet lyres.................. | 1,147 | | | | 1,155 | 1,802 | 4,104 | 15 | | | | 42 | 57 | 4,047 |
| Helmet numbers.................. | 169,593 | | | 1,000 | 1,490 | 291 | 172,374 | 5 | 1,054 | 1 | | 6,310 | 7,370 | 165,004 |
| Helmet plume sockets .................. | 8,884 | | | 3,000 | 28 | | 11,912 | 10 | 3,020 | 241 | | 1,089 | 4,360 | 7,552 |
| Helmet scrolls and rings.pairs.. | 9,547 | | | 3,000 | 61 | 332 | 12,943 | 30 | 3,000 | | | 1,062 | 4,092 | 8,851 |
| Helmet side buttons......do.... | 87,303 | 5,385 | | 7,675 | 1,597 | 1,123 | 103,083 | 11 | 6,915 | 35,000 | 94 | 6,331 | 48,351 | 54,732 |
| Helmet spikes.................. | 13,798 | | | 3,000 | 933 | | 17,731 | | 3,015 | | 14 | 2,182 | 5,211 | 12,520 |
| Helmet top bases.................. | 11,716 | | | 3,000 | 704 | 69 | 15,489 | | 3,015 | 400 | 14 | 2,859 | 6,288 | 9,201 |
| Khaki coats.................. | 3,691 | 24,396 | 200,150 | 4,713 | 211 | 1 | 233,162 | 30 | 149,810 | 35 | | 54,055 | 203,930 | 29,232 |
| Khaki trousers...........pairs.. | | 27,906 | 348,606 | 5,711 | 367 | 22 | 382,612 | 29 | 218,688 | 2,362 | | 85,354 | 336,433 | 46,179 |
| Leggings, canvas.........do.... | 53,018 | 377.403 | | 131,026 | 12,367 | 371 | 574,185 | 1,210 | 339,119 | 226 | 14,635 | 114,439 | 469,629 | 104,556 |
| Mittens: | | | | | | | | | | | | | | |
| Buckskin............do.... | | 1,800 | | | | | 1,800 | | | | | 1,800 | 1,800 | |
| Canvas ............do.... | 5,198 | | 2,000 | 4,200 | | 13 | 11,411 | 3 | 2,500 | | | 2,623 | 5,126 | 6,285 |
| Woolen............do.... | 36,496 | | | 25,840 | 1,057 | 30 | 63,423 | 9 | 4,300 | 1 | | 26,467 | 30,777 | 22,646 |
| Moccasins............do.... | | 2,300 | | | | | 2,300 | | | | | 2,201 | 2,201 | 99 |
| Music pouches .................. | 1,435 | 2,770 | | 140 | 42 | 36 | 4,423 | | 1,026 | 77 | | 610 | 1,713 | 2,710 |
| Neckties .................. | 32,932 | 40 | | 7,500 | 428 | | 40,900 | 8 | 5,001 | 218 | | 19,146 | 24,373 | 16,527 |
| Overalls.................pairs.. | 21,572 | | 31,902 | 5,705 | 361 | 324 | 59,864 | 60 | 16,249 | 3 | 78 | 7,690 | 24,080 | 35,784 |
| Overcoats: | | | | | | | | | | | | | | |
| Buffalo.................. | 2,266 | | | 1,310 | | | 3,576 | 1 | | 37 | | 12 | 50 | 3,526 |
| Canvas (blanket lined) ...... | 1,874 | | 1,102 | 1,000 | 300 | 1 | 4,277 | 61 | 1.065 | 1 | 2 | 1,917 | 3,046 | 1,237 |
| Kersey— | | | | | | | | | | | | | | |
| Made .................. | 90,090 | 3,605 | 13,716 | 15,785 | 2,776 | 3 | 125,975 | 120 | 6,681 | 1,133 | 1,757 | 24,703 | 34,394 | 91,581 |
| Unmade .................. | 168 | | 511 | | 34 | 8 | 721 | | | | | 596 | 596 | 125 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mackinaw | | 1,126 | | | | | 1,126 | | | | | 1,015 | 1,015 | 111 |
| Sheepskin, lined | | 590 | | | | | 590 | | | | | 500 | 500 | 90 |
| Overcoat cape linings.....sets | 21 | | 771 | 46 | | 115 | 953 | 21 | 1 | 31 | | 900 | 953 | |
| Overshoes, arctic.........pairs | 47,382 | 7,257 | | 17,963 | 14 | 192 | 72,808 | 3 | 1,025 | 1 | | 29,616 | 30,645 | 42,163 |
| Pajamas | | 15,598 | | | | | 15,598 | | 14,097 | 3 | | | 14,100 | 1,498 |
| Ponchos, rubber | 34,938 | 69,192 | | 72,625 | 1,467 | 2,021 | 180,243 | 370 | 7,500 | 510 | 6,264 | 69,045 | 83,689 | 96,554 |
| Robes, wolf and sheepskin | | 15 | | | | | 15 | | | | | 15 | 15 | |
| Shirts: | | | | | | | | | | | | | | |
| Chambray and nankeen | 39,625 | 493,619 | 2 | | 5,720 | 209 | 539,175 | 12 | 206,092 | 13,881 | | 242,420 | 462,405 | 76,770 |
| Dark blue flannel | 227,082 | 15,000 | 246,996 | 21,356 | 55,172 | 140 | 565,696 | 128 | 193,257 | 230 | 1,882 | 142,452 | 337,949 | 227,747 |
| Gingham and muslin | 137,186 | 60,000 | 75 | 50,224 | 2,528 | 528 | 250,541 | 239 | 35,927 | 88 | | 42,937 | 79,191 | 171,350 |
| Shirt studs, bone | 166,500 | 58,991 | | 52,077 | | 46,797 | 324,365 | | 47,268 | | | 1,310 | 48,573 | 275,792 |
| Shoes: | | | | | | | | | | | | | | |
| Barrack..............pairs | 63,681 | 92,069 | | 42,470 | 465 | 2,929 | 201,614 | 10 | 33,394 | 1,142 | | 40,240 | 75,786 | 125,828 |
| Calfskin (black and russet), pairs | 261,067 | 713,513 | | 98,482 | 5,939 | 2,338 | 1,081,339 | 170 | 449,807 | 3,009 | 2 | 248,101 | 701,089 | 380,250 |
| Felt and horsehide...pairs | | 850 | | | | | 850 | | 500 | | | 350 | 850 | |
| Shoe dressing...........pkgs | | 142,032 | | 3,000 | 120 | | 145,152 | | 70,750 | 12 | | 211 | 70,973 | 74,179 |
| Shoe pacs...............pairs | | 1,620 | | | | | 1,620 | | | | | 1,620 | 1,620 | |
| Slickers | | 13,754 | | | | | 13,754 | | 10,202 | 6 | | 3,446 | 13,654 | 100 |
| Soles, felt..............pairs | | 1,300 | | | | | 1,300 | | | | | 1,300 | 1,300 | |
| Stable frocks | 16,188 | | 27,160 | 4,110 | 225 | 63 | 47,746 | 8 | 8,839 | | 4 | 15,941 | 24,792 | 22,954 |
| Stockings, all kinds......pairs | 1,319,932 | 726,883 | | 528,145 | 712 | 149 | 2,575,821 | 310 | 1,126,192 | 5,030 | | 456,014 | 1,587,546 | 988,275 |
| Summer coats | 25,158 | 163,464 | 23,681 | 5,383 | 3,185 | 1.683 | 222,554 | 118 | 12,110 | 16 | 3 | 47,870 | 60,117 | 162,437 |
| Summer trousers........pairs | 17,283 | 168,604 | 37,091 | 5,950 | 3,076 | 1,626 | 233,630 | 21 | 15,543 | 11 | 26 | 56,668 | 72,269 | 161,361 |
| Suspenders..............do | 138,401 | 5,364 | | 23,769 | 21 | | 167,555 | 279 | 2,041 | 380 | | 13,095 | 15.795 | 151,760 |
| Sweaters | | 2,417 | | | | | 2,417 | | | | | 2,417 | 2,417 | |
| Trousers: | | | | | | | | | | | | | | |
| Engineers— | | | | | | | | | | | | | | |
| Made...........pairs | 2,890 | | | 235 | 45 | 2,670 | 5,840 | 1 | | | | 342 | 343 | 5,497 |
| Unmade.........do | 2 | | 216 | 155 | | | 373 | | | | | 216 | 216 | 157 |
| Foot— | | | | | | | | | | | | | | |
| Made.............do | 261,909 | 29,348 | 41,918 | 77,308 | 12,968 | 11,535 | 434,986 | 56 | 45,704 | 78 | 13,383 | 75,110 | 134,331 | 200,655 |
| Unmade.........do | 2,128 | | 18,313 | | | | 20,441 | 40 | 1,640 | 15 | 418 | 17,621 | 19,729 | 712 |
| Mackinaw...........do | 1 | 1,122 | | | | | 1,123 | | | | | 1,032 | 1,032 | 91 |
| Mounted— | | | | | | | | | | | | | | |
| Made............do | 85,136 | 3,309 | 14,966 | 19,337 | 923 | | 123,671 | 9 | 21,952 | 843 | 388 | 17,300 | 40,492 | 83,179 |
| Unmade.........do | 897 | | 13,383 | | 15 | | 14,295 | 39 | 3,700 | | | 9,836 | 13,575 | 720 |
| Oilskin..............do | | 2,180 | | | | | 2,180 | | | | | 2,180 | 2,180 | |
| Trousers stripes..........do | 13,752 | | 4,111 | 59,952 | 965 | 111 | 78,891 | 193 | 16,954 | 53 | 4,686 | 39,393 | 61,279 | 17,612 |
| Undershirts, all kinds | 722,911 | 551,165 | 48 | 249,820 | 6,237 | 2,600 | 1,532,781 | 148 | 430,487 | 2,488 | | 402,004 | 835,127 | 697,654 |
| Waist belts, leather | | 150,056 | | | | 1 | 150,057 | | 41,953 | | | 64,134 | 106,087 | 43,970 |
| Axes | 15,926 | 6,940 | | 8,340 | 199 | 6 | 31,411 | 95 | 8,835 | 142 | 178 | 7,077 | 16,327 | 15,084 |
| Ax helves | 53,265 | 23,030 | | 7,587 | 182 | 636 | 84,700 | 11 | 29,578 | 72 | 190 | 16,177 | 46,028 | 38,672 |
| Ax slings | 2,222 | | | | | | 2,222 | | | | 6 | | 6 | 2,216 |
| Barrack bags | 20,376 | | 82,860 | 4,052 | 7 | | 107,295 | 2 | 54,249 | 2 | 148 | 17,153 | 71,554 | 35,741 |
| Bedsacks | 44,373 | 10,000 | | 46,902 | 1,991 | 446 | 103,712 | 1,113 | 2,500 | 10 | 5,600 | 47,007 | 56,230 | 47,482 |
| Bedsheets | 20,673 | 159,435 | | 11,878 | 172 | 88 | 192,246 | 39 | 16,006 | 462 | 2 | 37,897 | 54,396 | 137,850 |
| Bedsteads, iron, with woven wire bottoms | 12,676 | 3,859 | | 368 | 20 | | 16,923 | 23 | 7,470 | 898 | 2 | 3,657 | 12,050 | 4,873 |

A.—*Statement showing articles of clothing and equipage and material on hand at the issuing depots of the Quartermaster's Department June 30, 1899; the quantities purchased, etc.*—Continued.

| Articles. | On hand June 30, 1899. | Purchased. | Manufactured. | Received from general and sub depots. | Received from posts. | Gained. | Total received. | Sold. | Transferred to general and sub depots. | Expended or dropped. | Issued. |  |  | Remaining on hand June 30, 1900. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  |  | To the militia. | To the Army. | Total. |  |
| Books: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Company— |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Council | 2,331 | 400 | ........ | 62 | ........ | ........ | 2,793 | ........ | 2 | 9 | ........ | 433 | 444 | 2,349 |
| Letters received | 4,224 | 400 | ........ | 290 | 12 | ........ | 4,926 | 1 | 436 | 3 | 135 | 854 | 1,429 | 3,497 |
| Index | 4,049 | 400 | ........ | 241 | 14 | ........ | 4,704 | ........ | 409 | 1 | 131 | 788 | 1,329 | 3,375 |
| Letters sent | 4,079 | 400 | ........ | 192 | 12 | ........ | 4,683 | ........ | 511 | 77 | 134 | 776 | 1,498 | 3,185 |
| Index | 3,802 | 400 | ........ | 239 | 13 | 85 | 4,539 | ........ | 211 | ........ | 131 | 810 | 1,152 | 3,387 |
| Order | 4,363 | 400 | ........ | 130 | 11 | 38 | 4,942 | ........ | 359 | ........ | 130 | 668 | 1,157 | 3,785 |
| Post— |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Council of administration | 596 | 350 | ........ | ........ | ........ | 1 | 947 | ........ | 218 | ........ | ........ | 43 | 261 | 686 |
| Letters received | 269 | 350 | ........ | 63 | 6 | 7 | 695 | 1 | 259 | 14 | ........ | 188 | 462 | 233 |
| Index | 206 | 350 | ........ | 62 | 6 | 91 | 715 | 1 | 161 | 1 | ........ | 192 | 355 | 360 |
| Letters sent | 569 | 350 | ........ | 77 | 6 | ........ | 1,002 | ........ | 386 | 169 | ........ | 149 | 704 | 298 |
| Index | 383 | 350 | ........ | 79 | 6 | 71 | 889 | ........ | 372 | 1 | ........ | 154 | 527 | 362 |
| Order | 548 | 350 | ........ | 22 | ........ | 1 | 921 | ........ | 214 | 27 | 1 | 93 | 335 | 586 |
| Regimental— |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Fund | 558 | 250 | ........ | 67 | ........ | 2 | 877 | ........ | 51 | ........ | 1 | 101 | 153 | 724 |
| Letters received | 364 | 250 | ........ | 75 | ........ | ........ | 689 | ........ | 86 | 6 | 19 | 129 | 240 | 449 |
| Index | 312 | 400 | ........ | 93 | ........ | 2 | 807 | ........ | 71 | ........ | 19 | 137 | 227 | 580 |
| Letters sent | 373 | 250 | ........ | 89 | ........ | 5 | 717 | ........ | 71 | ........ | 19 | 134 | 224 | 493 |
| Index | 374 | 400 | ........ | 94 | ........ | 9 | 877 | ........ | 71 | ........ | 19 | 133 | 223 | 654 |
| Order | 355 | 250 | ........ | 131 | ........ | 1 | 737 | 1 | 171 | ........ | 23 | 171 | 366 | 371 |
| Brooms, corn | 41,392 | 46,612 | ........ | 829 | 35 | 51 | 88,919 | 2 | 44,337 | 300 | 126 | 26,481 | 71,246 | 17,673 |
| Brushes, scrubbing | 14,532 | 38,679 | ........ | 13,661 | 4 | 527 | 67,403 | ........ | 36,600 | 98 | 72 | 20,880 | 57,650 | 9,753 |
| Bugles | 54 | ........ | ........ | 50 | ........ | ........ | 104 | ........ | ........ | ........ | 20 | 20 | 40 | 64 |
| Bunks, iron | 100 | ........ | ........ | ........ | 19 | ........ | 119 | 10 | ........ | ........ | ........ | 102 | 112 | 7 |
| Bunk card holders | 13,179 | 25,750 | ........ | 3,500 | 10 | 251 | 42,690 | ........ | 13,792 | ........ | ........ | 4,248 | 18,040 | 24,650 |
| Bunk bottoms | 3,938 | 130 | ........ | 1,500 | 15 | ........ | 5,583 | 24 | 260 | 52 | ........ | 1,366 | 1,702 | 3,881 |
| Chairs, barrack | 21,396 | 730 | ........ | 1,076 | 39 | 70 | 23,311 | 35 | 14,398 | 135 | 101 | 4,236 | 18,905 | 4,406 |
| Colors: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Camp | 899 | ........ | ........ | 26 | 1 | ........ | 926 | ........ | ........ | 32 | 16 | 162 | 210 | 716 |
| National | ........ | 55 | ........ | 2 | ........ | 23 | 80 | ........ | 1 | 1 | 5 | 62 | 69 | 11 |
| Regimental | 2 | 59 | ........ | ........ | ........ | 1 | 62 | ........ | 1 | 7 | 2 | 29 | 39 | 23 |
| Colors and guidons: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Belts and slings for | 328 | ........ | ........ | 8 | 2 | ........ | 338 | 3 | ........ | ........ | 3 | 72 | 78 | 260 |
| Staffs for | 868 | 193 | ........ | 70 | 71 | 494 | 1,696 | ........ | 65 | 35 | 25 | 487 | 612 | 1,084 |
| Cots, field | 20,598 | 48,025 | ........ | ........ | ........ | ........ | 68,623 | 507 | 51,930 | 10 | ........ | 1,244 | 53,691 | 14,932 |
| Drums | 1,360 | 16 | ........ | 578 | 3 | 2 | 1,959 | 8 | 593 | 117 | 19 | 155 | 892 | 1,067 |
| Drum cases | 201 | 4 | 80 | 36 | ........ | 1 | 222 | ........ | 40 | ........ | 18 | 93 | 151 | 171 |
| Drum cords | 172 | 100 | ........ | 37 | ........ | ........ | 309 | ........ | 2 | 2 | ........ | 69 | 73 | 236 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drumheads: | | | | | | | | | | | | | | |
| Batter | 1,540 | 150 | | 50 | 2 | | 1,742 | | 247 | 134 | | 289 | 670 | 1,072 |
| Snare | 914 | 102 | | 225 | 4 | | 1,245 | | 361 | 247 | | 262 | 870 | 375 |
| Drum knee rests | 41 | | | 25 | | | 66 | | | | | 25 | 25 | 41 |
| Drum rods | 356 | 30 | | 25 | 6 | | 417 | | 24 | | | 49 | 78 | 344 |
| Drum slings | 7,904 | 4 | | 226 | 2 | | 8,136 | 2 | 228 | 18 | 19 | 131 | 398 | 7,738 |
| Drum snares ... sets | 3,806 | 1 | | | | 654 | 4,461 | | 51 | 5 | | 13 | 69 | 4,392 |
| Drumsticks ... pairs | 3,251 | 1,205 | | 39 | 8 | 17 | 4,520 | 2 | 91 | 134 | 19 | 181 | 427 | 4,093 |
| Drumstick carriages | 2,265 | | | | | 2 | 2,267 | | | 4 | | 21 | 25 | 2,242 |
| Fifes | 2,585 | | | 48 | 4 | | 2,637 | 1 | 8 | 4 | 9 | 107 | 129 | 2,508 |
| Flags: | | | | | | | | | | | | | | |
| Corps | 56 | | | | 7 | 102 | 165 | | | | | | | 165 |
| Garrison | 218 | 150 | | 27 | 2 | 78 | 475 | | 47 | 24 | | 17 | 88 | 387 |
| Hospital— | | | | | | | | | | | | | | |
| Field | 147 | 18 | | 36 | 3 | | 204 | | | 15 | 17 | 47 | 79 | 125 |
| General | 31 | 16 | | 1 | | | 48 | | 13 | | | 6 | 9 | 29 |
| Post | 532 | 1,116 | | 172 | 2 | 95 | 1,917 | 22 | 610 | 40 | 7 | 231 | 910 | 1,007 |
| Storm and recruiting | 858 | 3,080 | | 429 | 1 | 22 | 4,390 | 48 | 2,744 | 36 | 15 | 1,319 | 4,162 | 228 |
| Flag halyards: | | | | | | | | | | | | | | |
| Garrison, post, and storm | 1,497 | 1,331 | | 355 | 1 | 1 | 3,185 | 32 | 842 | 79 | 10 | 155 | 1,118 | 2,067 |
| Recruiting | 1,498 | 2,008 | | 459 | 2 | 77 | 4,044 | 1 | 2,320 | | 2 | 1,008 | 3,326 | 718 |
| Guidons: | | | | | | | | | | | | | | |
| Ambulance | 313 | | | 152 | 65 | 44 | 674 | | | 6 | 1 | 76 | 83 | 591 |
| Artillery, cavalry, and Indian scouts | 30 | 232 | | 5 | | | 267 | | 124 | | 7 | 94 | 225 | 42 |
| Hammocks | 6,013 | | | 25,734 | | | 31,747 | | 2,948 | 6,002 | | 100 | 9,050 | 22,697 |
| Hatchets | 11,270 | 22,900 | | 4,904 | 1 | | 39,075 | 88 | 9,412 | 1,061 | 218 | 6,323 | 17,102 | 21,973 |
| Hatchet helves | 30,124 | 25,400 | | 4,771 | 325 | | 60,620 | 63 | 19,060 | 1,228 | 230 | 12,472 | 33,053 | 27,567 |
| Hatchet slings | 1,978 | | | | | | 1,978 | | | 2 | 6 | 30 | 38 | 1,940 |
| Kettles, camp | 12,585 | 2,400 | | 7,695 | | 227 | 22,907 | 335 | 6,538 | 40 | 728 | 4,776 | 12,417 | 10,490 |
| Litters, hand | 1,535 | 179 | | 6 | | | 1,720 | 4 | 1,333 | 5 | 10 | 293 | 1,645 | 75 |
| Mattresses | 30,820 | 9,890 | | 9,107 | 86 | | 49,903 | 427 | 7,854 | 2,192 | 2 | 10,162 | 20,637 | 29,266 |
| Mattress covers | 25,597 | 5,892 | | 2,000 | 805 | 344 | 34,638 | 371 | 2,620 | 11 | 2 | 12,418 | 15,422 | 19,216 |
| Mess pans | 50,448 | | | 10,457 | 436 | | 61,341 | 232 | 1,255 | 660 | 1,386 | 9,879 | 13,412 | 47,929 |
| Mosquito bars | 36,540 | 101,349 | | 25,137 | 676 | 18 | 163,720 | 647 | 52,681 | 1 | 12 | 40,608 | 93,949 | 69,771 |
| Mosquito head nets | 60,870 | 34,000 | | 33,211 | 373 | 9,689 | 138,143 | 18 | 6,879 | 9,611 | | 39,440 | 55,948 | 82,195 |
| Pickaxes | 11,528 | 2,400 | | 6,508 | 170 | 229 | 20,835 | 361 | 6,264 | 56 | 80 | 4,477 | 11,238 | 9,597 |
| Pickax helves | 11,996 | 21,012 | | 14,200 | 123 | 235 | 47,566 | 127 | 16,241 | 228 | 180 | 9,498 | 26,274 | 21,292 |
| Pickax slings | 2,317 | | | | | | 2,317 | | | | | | | 2,317 |
| Pillows | 5,307 | 56,347 | | 1,000 | 121 | | 62,675 | 23 | 2,336 | 6,382 | | 12,633 | 21,374 | 41,301 |
| Pillowcases | 35,831 | 94,723 | 1,800 | 5,598 | 196 | 5,815 | 143,963 | 9 | 25,343 | 2 | | 20,390 | 45,744 | 98,219 |
| Pillow sacks | 50,378 | | 10,000 | 6,915 | 3,323 | 1,523 | 72,139 | | 1,210 | | | 34,032 | 35,242 | 36,897 |
| Shovels, long handles | 12,039 | 3,000 | | 5,481 | 27 | 204 | 20,751 | 3 | 1,571 | 17 | 8 | 2,445 | 4,044 | 16,707 |
| Shovels, short handles | 14,769 | 3,600 | | 5,828 | 38 | 130 | 24,365 | 11 | 8,185 | 167 | 68 | 3,382 | 11,763 | 12,602 |
| Spades | 17,146 | 1,800 | | 4,180 | 145 | | 23,271 | 46 | 586 | 35 | 94 | 4,144 | 4,905 | 18,366 |
| Spade slings | 129 | | | | | | 129 | | | | | | | 129 |
| Stencils: | | | | | | | | | | | | | | |
| Alphabets | 7 | | | | 16 | | 23 | | | | | 3 | 3 | 20 |
| Boxes, complete | 2,341 | 200 | | 279 | 6 | | 2,826 | | 247 | 10 | 18 | 203 | 478 | 2,348 |
| Company marking stamps | 14 | 368 | | 1 | 56 | | 439 | | 31 | 23 | 50 | 288 | 392 | 47 |
| Numbers | 23 | | | | | 1 | 24 | | | | | 7 | 7 | 17 |

A.—*Statement showing articles of clothing and equipage and material on hand at the issuing depots of the Quartermaster's Department June 30, 1899; the quantities purchased, etc.*—Continued.

| Articles. | On hand June 30, 1899. | Purchased. | Manufactured. | Received from general and sub depots. | Received from posts. | Gained. | Total received. | Sold. | Transferred to general and sub depots. | Expended or dropped. | Issued. | | | Remaining on hand June 30, 1900. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | To the militia. | To the Army. | Total. | |
| Tents: | | | | | | | | | | | | | | |
| Common | 5,801 | 4,000 | 4,331 | 5,069 | 322 | 687 | 20,210 | 243 | 2,621 | 628 | 1,976 | 3,085 | 8,553 | 11,657 |
| Conical wall | 2,805 | ........ | 7,654 | 4,153 | 103 | 6 | 14,721 | 17 | 5,083 | 230 | 70 | 3,368 | 8,768 | 5,953 |
| Hospital | 6,330 | 232 | 102 | 3,129 | 23 | 140 | 9,956 | 50 | 1,765 | 33 | 83 | 636 | 2,517 | 7,439 |
| Shelter halves | 93,978 | ........ | 21 | 54,987 | 1,926 | 2,987 | 153,899 | 1,977 | 21,491 | 3,574 | 5,500 | 40,909 | 73,451 | 80,448 |
| Wall | 5,109 | 2,000 | 696 | 2,869 | 188 | 246 | 11,108 | 326 | 1,180 | 307 | 871 | 2,116 | 4,800 | 6,808 |
| Tent chains | 3,829 | 9,755 | ........ | 3,553 | ........ | ........ | 17,137 | ........ | 3,927 | 3,936 | ........ | 1,956 | 9,819 | 7,318 |
| Tent flies: | | | | | | | | | | | | | | |
| Hospital | 7,535 | 232 | 117 | 3,115 | 22 | 98 | 11,119 | 117 | 1,900 | 59 | 45 | 612 | 2,733 | 8,886 |
| Wall | 4,938 | 2,900 | 778 | 3,841 | 218 | 248 | 12,923 | 90 | 1,371 | 356 | 514 | 2,182 | 4,518 | 8,410 |
| Tent pins: | | | | | | | | | | | | | | |
| Iron | 3,966 | 100 | ........ | 11,400 | ........ | ........ | 15,466 | ........ | 11,400 | ........ | ........ | 3,600 | 15,000 | 466 |
| Shelter | 648,489 | 50,000 | ........ | 201,474 | 3,916 | 6,391 | 910,270 | 2,039 | 63,140 | 30 | 27,000 | 201,603 | 293,812 | 616,458 |
| Wooden— | | | | | | | | | | | | | | |
| Large | 228,161 | 376,096 | ........ | 64,968 | 868 | 3,501 | 673,594 | 460 | 62,701 | 1,466 | 9,514 | 115,029 | 189,170 | 484,424 |
| Small | 625,807 | 786,187 | ........ | 439,456 | 3,616 | 22,914 | 1,877,980 | 5,280 | 363,269 | 25,958 | 67,844 | 391,215 | 850,466 | 1,027,414 |
| Tent poles: | | | | | | | | | | | | | | |
| Common— | | | | | | | | | | | | | | |
| Ridge | 21,843 | 3,641 | ........ | 23,475 | 749 | 1,842 | 51,550 | 348 | 1,787 | 2,390 | 1,930 | 2,944 | 9,399 | 42,151 |
| Upright | 45,349 | 6,012 | ........ | 45,066 | 1,146 | ........ | 97,573 | 1,371 | 3,814 | 1,409 | 3,940 | 5,841 | 16,375 | 81,198 |
| Conical wall | 3,450 | 7,277 | ........ | 4,935 | 103 | 412 | 16,177 | 134 | 3,686 | 726 | 90 | 5,419 | 10,005 | 6,172 |
| Hospital— | | | | | | | | | | | | | | |
| Ridge | 7,699 | 1,577 | ........ | 4,196 | 153 | 179 | 13,804 | 126 | 1,738 | 38 | 33 | 655 | 2,590 | 11,214 |
| Upright | 14,610 | 4,229 | ........ | 8,165 | 138 | 588 | 27,730 | 196 | 3,773 | 14 | 66 | 1,324 | 5,373 | 22,857 |
| Shelter | 117,480 | 29,000 | ........ | 50,847 | 1,124 | 14 | 198,465 | 2,620 | 43,743 | 5,441 | 5,520 | 38,647 | 95,971 | 102,494 |
| Wall— | | | | | | | | | | | | | | |
| Ridge | 8,263 | 5,006 | ........ | 6,096 | 186 | 660 | 20,211 | 300 | 1,050 | 594 | 912 | 2,081 | 4,937 | 15,274 |
| Upright | 18,327 | 4,612 | ........ | 6,127 | 352 | 1,927 | 31,345 | 687 | 1,925 | 1,179 | 1,774 | 3,885 | 9,450 | 21,895 |
| Tent-pole sockets | 267 | ........ | ........ | ........ | ........ | 426 | 693 | ........ | 500 | 5 | ........ | 58 | 563 | 131 |
| Tent rings: | | | | | | | | | | | | | | |
| Number | 9,632 | 13,177 | ........ | 28 | ........ | 477 | 23,314 | ........ | 3,700 | 5,856 | ........ | 546 | 10,102 | 13,212 |
| Pounds | 6,331 | 5,164 | ........ | 2,767 | ........ | ........ | 11,772 | ........ | 1,631 | 3,584 | ........ | 301 | 5,522 | 6,250 |
| Tent slips, metallic | 233,871 | 422,412 | ........ | 500 | 12,710 | ........ | 669,493 | 78,800 | 86,600 | 164,120 | ........ | 14,589 | 344,109 | 325,384 |
| Tent straps | 3 | ........ | ........ | ........ | ........ | ........ | 3 | ........ | ........ | ........ | ........ | ........ | ........ | 3 |
| Tent stoves | 9,940 | 640 | ........ | 7,484 | 251 | 304 | 18,619 | 106 | 750 | 24 | 21 | 2,532 | 3,433 | 15,186 |
| Tent stovepipe ..........joints | 49,797 | 3,000 | ........ | 20,622 | ........ | 34 | 73,453 | 334 | 2,595 | 81 | 5 | 16,710 | 19,725 | 53,728 |
| Tent tripods | 2,609 | 7,816 | ........ | 4,943 | 105 | 2,025 | 17,498 | 50 | 3,754 | 971 | 90 | 5,009 | 9,874 | 7,624 |
| Trumpets | 299 | 3,504 | ........ | 1,150 | 21 | 214 | 5,188 | 60 | 757 | 86 | 534 | 1,134 | 2,571 | 2,617 |
| Trumpet cords and tassels | 6,831 | 600 | ........ | 199 | 40 | ........ | 7,670 | 15 | 1,398 | 108 | 575 | 1,069 | 3,165 | 4,405 |
| Trumpet crooks | 3,292 | 602 | ........ | 62 | 40 | ........ | 3,996 | 10 | 1,268 | 19 | 90 | 129 | 1,516 | 2,480 |
| Trumpet mouthpieces | 280 | 2,206 | ........ | 143 | 129 | 59 | 2,817 | ........ | 596 | 103 | ........ | 313 | 1,012 | 1,805 |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Whistles | 585 | 7,200 | ........ | 2,195 | 51 | ........ | 10,031 | ........ | 3,808 | 549 | ........ | 3,850 | 8,207 | 1,824 |
| Buttons, all kinds.....number | 12,194,272 | 24,796,544 | ........ | 2,622,712 | 4,596 | 462,491 | 40,080,615 | 1,227 | 927,036 | 8,362,986 | 1,863 | 620,577 | 9,913,689 | 30,166,926 |
| Cloth: | | | | | | | | | | | | | | |
| Blanket lining......yards | 44,443 | ........ | ........ | ........ | ........ | ........ | 44,443 | 11 | 53 | 3,383 | ........ | 56 | 3,503 | 40,940 |
| Dark blue.......do | 11,697 | 9,264 | ........ | 2,481 | ........ | 200 | 23,642 | 130 | 1,548 | 10,826 | ........ | 513 | 13,017 | 10,625 |
| Facing.......do | 26,566 | 12,044 | ........ | 330 | ........ | ........ | 38,940 | 11 | 408 | 5,914 | ........ | 12 | 6,345 | 32,595 |
| Italian.......do | 20,194 | 503 | ........ | ........ | ........ | 160 | 20,857 | 7 | 502 | 783 | ........ | 2,906 | 4,198 | 16,659 |
| Drilling.......do | 171,524 | 231,015 | ........ | 15,721 | ........ | 10 | 418,270 | 15 | 5,145 | 143,906 | ........ | 10,581 | 159,647 | 258,623 |
| Duck: | | | | | | | | | | | | | | |
| Bleached and brown, yards | 76,715 | 1,314,172 | ........ | 70,178 | ........ | 50,191 | 1,511,256 | 120 | 64,921 | 993,408 | ........ | 6,257 | 1,064,706 | 446,550 |
| Tent.......yards | 210,312 | 1,320,659 | ........ | 98 | 50 | 153,000 | 1,684,119 | ........ | 275,800 | 595,805 | ........ | 31,570 | 902,975 | 781,144 |
| Flannel: | | | | | | | | | | | | | | |
| Blouse.......do | 98,832 | 130,970 | ........ | 35,785 | ........ | 42,916 | 308,503 | 245 | 36,157 | 141,149 | ........ | 608 | 178,159 | 130,344 |
| Blouse lining.......do | 307,023 | ........ | ........ | ........ | ........ | 4,817 | 311,840 | ........ | 2,077 | 99,532 | 70 | 15 | 101,694 | 210,146 |
| Canton.......do | 31,441 | 188,893 | ........ | 1,061 | 70 | 45,000 | 266,465 | 15 | 1,061 | 58,091 | ........ | 1,178 | 60,345 | 206,120 |
| Shirting and overcoat lining.......yards | 189,069 | 440,983 | ........ | 24,846 | 30 | 16,357 | 671,285 | 5 | 23,373 | 530,057 | ........ | 7,672 | 561,107 | 111,178 |
| Jeans: | | | | | | | | | | | | | | |
| Corset.......do | 15,746 | 597,683 | ........ | 15,107 | ........ | ........ | 628,536 | 169 | 301 | 87,255 | ........ | 3,825 | 91,550 | 536,986 |
| White.......do | 101,762 | 293,832 | ........ | ........ | ........ | ........ | 395,594 | ........ | 207 | 126,188 | ........ | 11,342 | 137,737 | 157,857 |
| Kersey, all kinds.......do | 310,143 | 464,217 | ........ | 8,490 | 36 | ........ | 782,886 | 54 | 8,840 | 201,626 | ........ | 393 | 210,913 | 571,973 |
| Khaki material.......do | 3,112 | 2,497,849 | ........ | 86,173 | ........ | 14,649 | 2,601,783 | 709 | 141,368 | 1,874,164 | ........ | 171 | 2,016,412 | 585,371 |
| Lace, gold.......do | 3,134 | 11,836 | ........ | 2,012 | ........ | ........ | 16,982 | 105 | 1,012 | 8,580 | ........ | ........ | 9,697 | 7,285 |
| Lasting.......do | 105,833 | 52,253 | ........ | ........ | ........ | 2,247 | 160,333 | 4 | ........ | 1,008 | ........ | ........ | 1,012 | 159,321 |
| Muslin.......do | 251,470 | 5,108 | ........ | ........ | ........ | ........ | 256,578 | 9 | ........ | 67,664 | 30 | ........ | 67,703 | 188,875 |
| Naphthaline.......pounds | 50,759 | 39,272 | ........ | 502 | ........ | ........ | 90,533 | ........ | 4,050 | 22,384 | 438 | 4,382 | 31,254 | 59,279 |
| Padding.......yards | 516,460 | 111,924 | ........ | ........ | ........ | 20,000 | 648,384 | 2 | ........ | 141,554 | 30 | 536 | 142,122 | 506,262 |
| Paper, petroleum.......pounds | 154,897 | 36,000 | ........ | 5,000 | ........ | ........ | 195,897 | 20 | 14,857 | 69,580 | ........ | 8,978 | 93,385 | 102,512 |
| Paper, tissue.......reams | 399 | 50 | ........ | ........ | ........ | ........ | 449 | ........ | ........ | 138 | ........ | 13 | 151 | 298 |
| Paper, wrapping.......do | 1,410 | 1,224 | ........ | 100 | ........ | ........ | 2,734 | ........ | ........ | 2,098 | ........ | 105 | 2,203 | 531 |
| Shirting, khaki.......yards | ........ | 138,429 | ........ | ........ | ........ | ........ | 138,429 | ........ | ........ | 132 | ........ | ........ | 132 | 138,297 |
| Silesia.......do | 502,611 | 57,613 | ........ | ........ | ........ | 22,003 | 582,227 | 1 | ........ | 74,519 | ........ | 352 | 74,872 | 507,355 |
| Wadding.......sheets | 114,220 | ........ | ........ | ........ | ........ | 994 | 115,214 | ........ | ........ | 15,932 | ........ | 382 | 16,314 | 98,900 |
| *Band instruments.* | | | | | | | | | | | | | | |
| Altos | 86 | 17 | ........ | 4 | 36 | 9 | 152 | ........ | 20 | ........ | 2 | 101 | 123 | 29 |
| Baritones and euphoniums | 35 | 15 | ........ | 2 | 14 | 5 | 71 | ........ | 10 | 2 | 2 | 48 | 62 | 9 |
| Bassos | 70 | 36 | ........ | 1 | 18 | 2 | 127 | ........ | 13 | 5 | 1 | 83 | 102 | 25 |
| Clarinets | 128 | 59 | ........ | 5 | 37 | 6 | 235 | ........ | 27 | ........ | ........ | 208 | 235 | ........ |
| Cornets | 141 | 24 | ........ | 2 | 41 | 5 | 213 | ........ | 27 | 3 | 2 | 163 | 195 | 18 |
| Cymbals.......pairs | 7 | 78 | ........ | ........ | 3 | ........ | 88 | ........ | 5 | ........ | ........ | 27 | 32 | 56 |
| Drums, bass | 12 | 69 | ........ | ........ | 6 | 10 | 97 | ........ | 3 | ........ | 3 | 34 | 40 | 57 |
| Flugel horns | ........ | 2 | ........ | ........ | ........ | ........ | 2 | ........ | ........ | ........ | ........ | 1 | 1 | 1 |
| Flutes | 27 | 12 | ........ | ........ | 4 | ........ | 43 | ........ | 9 | ........ | ........ | 30 | 39 | 4 |
| Piccolos | 34 | 4 | ........ | 1 | 10 | ........ | 49 | ........ | 5 | ........ | ........ | 33 | 38 | 11 |
| Saxophones | 1 | ........ | ........ | ........ | ........ | ........ | 1 | ........ | ........ | ........ | ........ | 1 | 1 | ........ |
| Triangles | 11 | 61 | ........ | ........ | 8 | ........ | 80 | ........ | 3 | 2 | ........ | 16 | 21 | 59 |
| Trombones | 117 | 26 | ........ | 22 | 13 | 4 | 182 | ........ | 10 | ........ | 2 | 110 | 122 | 60 |
| Bags | 361 | ........ | 385 | 11 | 74 | 8 | 839 | ........ | 44 | ........ | 7 | 346 | 397 | 442 |
| Batons | ........ | 43 | ........ | ........ | ........ | ........ | 43 | ........ | 7 | ........ | ........ | 28 | 35 | 8 |

A.—*Statement showing articles of clothing and equipage and material on hand at the issuing depots of the Quartermaster's Department June 30, 1899; the quantities purchased, etc.*—Continued.

| Articles. | On hand June 30, 1899. | Purchased. | Manufactured. | Received from general and sub depots. | Received from posts. | Gained. | Total received. | Sold. | Transferred to general and sub depots. | Expended or dropped. | Issued. | | | Remaining on hand June 30, 1900. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | To the militia. | To the Army. | Total. | |
| *Band instruments*—Continued. | | | | | | | | | | | | | | |
| Cases | 188 | 1 | 36 | 1 | 84 | ........ | 310 | ........ | 3 | 119 | 1 | 40 | 163 | 147 |
| Cords, bass drum | 109 | ........ | ........ | ........ | 1 | ........ | 110 | ........ | 4 | 9 | ........ | 14 | 27 | 83 |
| Heads, bass drum | 44 | 458 | ........ | ........ | ........ | 14 | 516 | ........ | 89 | 3 | ........ | 96 | 188 | 328 |
| Mouthpieces | 54 | 715 | ........ | ........ | 2 | ........ | 771 | ........ | 248 | 211 | ........ | 103 | 562 | 209 |
| Music holders | ........ | 670 | ........ | ........ | 5 | 9 | 684 | ........ | 300 | 23 | ........ | 52 | 375 | 309 |
| Music stands | 1,903 | 1,315 | ........ | 24 | ........ | ........ | 3,242 | ........ | 58 | ........ | ........ | 858 | 916 | 2,326 |
| Pads | 18,497 | 68,400 | ........ | ........ | ........ | ........ | 86,897 | ........ | 5,380 | ........ | ........ | 5,079 | 10,459 | 76,438 |
| Reeds | 6,074 | 47,102 | ........ | ........ | ........ | ........ | 53,176 | ........ | 4,716 | ........ | ........ | 3,221 | 7,937 | 45,239 |
| Shakos | ........ | 12 | ........ | ........ | ........ | ........ | 12 | ........ | ........ | ........ | ........ | 6 | 6 | 6 |
| Springs | 2,963 | 5,729 | ........ | ........ | ........ | ........ | 8,692 | ........ | 1,671 | ........ | ........ | 1,584 | 3,255 | 5,439 |
| Sticks, bass drum | 43 | 65 | ........ | ........ | ........ | ........ | 108 | ........ | ........ | 22 | ........ | 13 | 35 | 73 |

B.—*Statement showing articles of clothing and equipage and material on hand at the issuing depots of the Quartermaster's Department in Cuba, Porto Rico, Hawaii, and the Philippine Islands*[1] *June 30, 1899; the quantities purchased, manufactured, received from posts and depots, taken up, sold, transferred to general depots, expended, issued, and the quantities remaining in depots June 30, 1900.*

| Articles | On hand June 30, 1899. | Purchased. | Manufactured. | Received from general depots. | Received from posts. | Gained. | Total received. | Sold. | Transferred to general depots. | Expended or dropped. | Issued. | Total. | Remaining on hand June 30, 1900. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Abdominal bands | 50,558 | | | 5,775 | 694 | | 57,027 | 355 | | | 9,292 | 9,647 | 47,380 |
| Aiguillettes and shoulder knots ......sets | 958 | | | 56 | 22 | | 1,036 | | 400 | | 428 | 828 | 208 |
| Blankets, woolen | 55,012 | | | 13,851 | 1,939 | 3 | 70,805 | 588 | 13,203 | 7 | 31,752 | 45,550 | 25,255 |
| Blouses: | | | | | | | | | | | | | |
| Made | 21,476 | | | 6,388 | 2,166 | | 29,930 | 302 | 2,882 | 29 | 8,444 | 11,657 | 18,273 |
| Unmade | 61 | | | 4,817 | 1 | | 4,879 | 20 | 43 | | 1,611 | 1,674 | 3,205 |
| Boots: | | | | | | | | | | | | | |
| Calfskin ......pairs | 7,434 | | | 969 | 2,202 | | 10,605 | 29 | 3,869 | | 1,005 | 4,903 | 5,702 |
| Rubber ......do | 7,727 | | | 10,609 | 473 | | 18,809 | 271 | 5,088 | | 8,585 | 14,944 | 3,865 |
| Brassards | 5,648 | | | 2,021 | 2 | 1 | 7,672 | 20 | | | 2,175 | 2,195 | 5,477 |
| Canvas fatigue coats | 19,435 | | | 14,845 | 1,836 | | 36,116 | 40 | 5,278 | 3 | 9,884 | 15,205 | 20,911 |
| Canvas fatigue trousers ......pairs | 68,500 | | | 9,245 | 2,128 | | 79,873 | 941 | 1,613 | 97 | 33,362 | 36,013 | 43,860 |
| Caps, forage | 54,379 | | | 4,669 | 328 | | 59,376 | 52 | 29,396 | 2 | 17,479 | 46,929 | 12,447 |
| Cap ornaments | 54,348 | | | 52,802 | 1,300 | 197 | 108,647 | 371 | 9,768 | 22 | 35,932 | 46,093 | 62,554 |
| Chevrons, all kinds ......pairs | 61,858 | | 24 | 44,254 | 3,599 | 2,158 | 111,893 | 1,107 | 1,221 | 7,219 | 42,082 | 51,629 | 60,264 |
| Collars, linen | 50,872 | | | 158,897 | 4,461 | | 214,230 | 847 | 1,500 | 84 | 73,875 | 76,306 | 137,924 |
| Drawers, all kinds ......pairs | 241,739 | | | 272,279 | 32,224 | 2 | 562,634 | 5,767 | 26,982 | 470 | 310,681 | 343,900 | 218,734 |
| Gauntlets, leather ......do | 45,535 | | | 27,635 | 2,530 | | 45,535 | 619 | 958 | 25 | 24,565 | 26,167 | 19,368 |
| Gloves, Berlin ......do | 138,245 | | | 208,626 | 11,947 | | 358,818 | 600 | 7,300 | 6,000 | 165,903 | 179,803 | 179,015 |
| Hats: | | | | | | | | | | | | | |
| Campaign | 139,827 | | | 98,696 | 3,203 | 204 | 241,930 | 1,493 | 809 | 224 | 148,395 | 150,921 | 91,009 |
| Canvas | 1,949 | | | 44 | | | 1,993 | | | | | | 1,993 |
| Panama | 1,707 | | | 3,266 | 189 | | 5,162 | 85 | 191 | 1 | 2,880 | 3,157 | 2,005 |
| Southwester | 135 | | | 9,149 | 4,962 | 3 | 14,249 | 51 | 7,992 | | 1,978 | 10,021 | 4,228 |
| Hat ornaments | 454,896 | | | 11,086 | | | 465,982 | 6 | 2,448 | | 118,721 | 121,175 | 344,707 |
| Hat cords | 111,607 | | | 64,475 | 1,519 | 2 | 177,603 | 106 | 3,589 | 400 | 92,745 | 96,840 | 80,763 |
| Helmets, cork | 66,909 | | | 25,688 | 4,572 | 5 | 97,174 | 358 | 18,614 | 2,013 | 27,489 | 48,474 | 48,700 |
| Khaki coats | 34,011 | | | 64,617 | 6,605 | 222 | 105,455 | 3,454 | 4,102 | 162 | 59,673 | 67,391 | 38,064 |
| Khaki trousers ......pairs | 139,624 | 127,775 | | 182,341 | 4,318 | | 454,058 | 4,668 | 3,597 | 491 | 261,148 | 269,904 | 184,154 |
| Leggings ......do | 220,598 | | | 72,545 | 7,549 | 277 | 300,969 | 2,864 | 6,473 | 3,654 | 198,883 | 211,874 | 89,085 |
| Legging laces ......do | 2,363 | | | 2,085 | 15,012 | | 19,460 | 184 | | | 244 | 428 | 19,032 |
| Mittens, woolen ......do | 824 | | | | 173 | | 997 | | 826 | | | 826 | 171 |
| Neckties | 18,905 | | | 17,744 | 1,649 | | 38,298 | 321 | | 54 | 13,421 | 13,796 | 24,502 |
| Overcoats: | | | | | | | | | | | | | |
| Kersey | 4,110 | | | 3,898 | 458 | | 8,466 | 16 | 944 | 32 | 1,755 | 2,747 | 5,719 |
| Pantasote | | | | 472 | 1 | | 473 | 6 | | 5 | 15 | 26 | 447 |
| Overalls ......pairs | 12,365 | | | 11,873 | 946 | | 25,184 | 24 | 827 | 77 | 10,316 | 11,244 | 14,940 |

[1] Owing to the impracticability of obtaining sufficient data from Manila only the transactions for a period of six months are included in the foregoing. The item of khaki coats is entirely omitted from the report received from the Philippine Islands.

B.—*Statement showing articles of clothing and equipage and material on hand at the issuing depots of the Quartermaster's Department in Cuba, etc.*—Cont'd.

| Articles. | On hand June 30, 1899. | Purchased. | Manufactured. | Received from general depots. | Received from posts. | Gained. | Total received. | Sold. | Transferred to general depots. | Expended or dropped. | Issued. | Total. | Remaining on hand June 30, 1900. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pajamas | 211 | | | 19,638 | | | 19,849 | 465 | | 4 | 11,808 | 12,277 | 7,572 |
| Ponchos | 107,352 | | | 1,337 | 5,175 | 19 | 113,881 | 1,081 | 21,152 | 16 | 38,122 | 60,371 | 53,512 |
| Shirts: | | | | | | | | | | | | | |
| Flannel, muslin, and under | 641,552 | | | 210,251 | 52,772 | 32 | 904,607 | 7,527 | 126,763 | 3,105 | 402,791 | 640,176 | 264,431 |
| Chambray, gingham, and nankeen | 148,329 | | | 128,103 | 95,846 | 432 | 372,710 | 2,761 | 3,109 | 57 | 171,450 | 177,377 | 195,333 |
| Shoes, all kinds | 350,578 | | | 195,034 | 49,497 | 167 | 595,276 | 3,097 | 28,656 | 541 | 293,291 | 325,585 | 269,691 |
| Shoe laces | 164,029 | | | 674 | | | 164,703 | 191 | | | 1,590 | 1,781 | 162,922 |
| Shoe dressing packages | | | | 45,548 | 713 | | 46,261 | 85 | 1,426 | | 21,894 | 23,405 | 32,856 |
| Stable frocks | 39,974 | | | 13,603 | 162 | 1 | 53,740 | | 1,125 | 79 | 10,651 | 11,855 | 41,885 |
| Shirt studs | 128,591 | | | 62,438 | | | 191,029 | 6 | 1,500 | | 14,171 | 15,677 | 175,352 |
| Shoulder straps, khaki | 174 | | | 34,539 | 1,410 | 11,779 | 47,902 | 304 | 150 | 6,780 | 32,458 | 39,692 | 8,210 |
| Slickers: | | | | | | | | | | | | | |
| Common | 3,158 | | | 13,670 | | | 16,828 | 203 | | 69 | 7,792 | 8,064 | 8,764 |
| Pommel | 1,090 | | | 1,310 | | | 2,400 | 15 | | | 1,059 | 1,074 | 1,326 |
| Stockings, all kinds pairs | 447,926 | | | 381,338 | 19,443 | 562 | 849,269 | 9,474 | 27,992 | 2,333 | 625,917 | 665,914 | 183,355 |
| Summer coats | 27,085 | | | 29,612 | 6,732 | | 63,429 | 333 | 7,690 | 15 | 20,702 | 28,740 | 34,689 |
| Suspenders pairs | 53,607 | | | 5,418 | 2,957 | 37 | 62,019 | 483 | 2,439 | 39 | 19,501 | 22,462 | 39,557 |
| Trousers, kersey and summer do | 153,420 | | | 107,326 | 26,797 | 491 | 288,034 | 1,457 | 43,838 | 612 | 101,585 | 147,492 | 130,542 |
| Trousers' stripes do | 30,576 | | | 29,408 | 1,393 | 10 | 51,387 | 259 | 1,054 | | 12,518 | 13,831 | 37,556 |
| Waist belts, leather | 35,952 | | | 58,455 | 360 | | 94,767 | 484 | | | 18,322 | 18,806 | 75,961 |
| *Equipage.* | | | | | | | | | | | | | |
| Axes | 17,485 | | | 2,702 | 586 | | 20,773 | 294 | 2,711 | 2,359 | 4,198 | 9,562 | 11,211 |
| Ax helves | 9,942 | | | 9,317 | 902 | | 20,206 | | 567 | 3,076 | 10,449 | 14,092 | 6,114 |
| Barrack bags | 62,557 | | | 14,167 | 2,920 | 2 | 79,646 | 52 | 3,832 | 783 | 9,003 | 13,670 | 65,976 |
| Bed sacks | 13,265 | | | 7,149 | 4,731 | 302 | 25,447 | 205 | 11,364 | 1,345 | 1,670 | 14,584 | 10,863 |
| Bed sheets | 98,343 | | | 65,692 | 2,939 | 13 | 166,987 | 1,677 | 35,529 | 3,435 | 71,025 | 111,666 | 55,321 |
| Bedsteads, with woven-wire bottoms | 13,658 | | | 15,099 | 2,578 | 1,095 | 32,430 | 792 | 449 | 111 | 20,745 | 22,097 | 10,333 |
| Books, all kinds | 8,970 | | | 4,384 | 297 | 103 | 13,754 | 72 | 1,003 | 215 | 3,830 | 5,120 | 8,634 |
| Brooms, corn | 14,839 | | | 27,711 | 5,519 | 2,038 | 50,107 | 599 | | 3,744 | 30,978 | 35,321 | 14,786 |
| Brushes, scrubbing | 13,732 | | | 18,765 | 544 | 18 | 33,059 | 136 | 77 | 2,450 | 19,072 | 21,875 | 11,204 |
| Bugles | 60 | | | 6 | 2 | | 68 | | | 1 | 6 | 7 | 61 |
| Bunk card holders | 4,028 | | | 2,178 | | | 6,206 | | 37 | 38 | 3,172 | 3,247 | 2,959 |
| Camp colors and flags | 1,387 | 1,684 | | 1,668 | 46 | 9 | 4,794 | 25 | | 337 | 1,280 | 1,542 | 3,252 |
| Camp kettles | 7,566 | | | 1,865 | 692 | 3 | 10,126 | 417 | 1,579 | 599 | 2,929 | 5,524 | 4,602 |
| Chairs, barrack | 6,951 | | | 8,875 | 599 | | 16,425 | 874 | 21 | 322 | 6,788 | 8,005 | 8,420 |
| Cots, field | 14,328 | | | 45,795 | 1,107 | 143 | 61,373 | 613 | | 3,888 | 42,366 | 46,867 | 14,506 |
| Drums | 47 | | | 42 | | 2 | 91 | | 2 | 1 | 32 | 35 | 56 |
| Drum parts | 524 | | | 511 | | 2 | 1,037 | | 4 | 41 | 531 | 576 | 461 |
| Fifes | 132 | | | 56 | | | 188 | 2 | 1 | 10 | 6 | 19 | 169 |
| Flag halyards | 744 | | | 1,197 | 5 | | 1,946 | | | 177 | 409 | 586 | 1,360 |
| Guidons, all kinds | 480 | | | 196 | 49 | 1 | 736 | | 21 | 18 | 64 | 103 | 633 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Guidon staffs | 58 | | | 95 | 2 | 1 | 156 | 1 | 7 | 7 | 35 | 50 | 106 |
| Hammocks | 4,194 | | | 7,536 | 414 | | 12,144 | 750 | | 28 | 464 | 1,242 | 10,902 |
| Hand litters | 233 | | | 1,091 | 5 | 37 | 1,366 | | 405 | 168 | 97 | 670 | 696 |
| Hatchets and helves | 17,698 | | | 4,901 | 404 | 193 | 23,196 | 112 | 3,181 | 3,956 | 5,348 | 12,597 | 10,599 |
| Marking stamps | 98 | | | 25 | 8 | | 131 | | 14 | 4 | 18 | 36 | 95 |
| Mattresses | 15,011 | | | 8,305 | 1,446 | 204 | 24,966 | 869 | 2,046 | 115 | 10,628 | 13,658 | 11,308 |
| Mattress covers | 17,580 | | | 40,141 | 1,422 | | 59,098 | 465 | 6,833 | 343 | 32,590 | 40,231 | 18,862 |
| Mess pans | 9,065 | | | 1,665 | 1,751 | | 12,481 | 547 | 1,587 | 421 | 1,584 | 4,139 | 8,342 |
| Mosquito bars and head nets | 186,745 | | | 34,784 | 15,605 | | 237,134 | 1,663 | 41,411 | 4,767 | 115,018 | 162,859 | 74,275 |
| Pickaxes and helves, | 21,602 | | | 8,142 | 5,753 | 52 | 35,549 | 270 | 8,654 | 3,540 | 8,430 | 20,894 | 14,655 |
| Pillows, pillowcases and pillow sacks | 39,202 | | | 82,168 | 8,482 | 1 | 129,853 | 1,261 | 26,299 | 1,576 | 41,586 | 70,722 | 59,131 |
| Shovels, all kinds | 20,905 | | | 8,065 | 3,616 | 27 | 32,613 | 377 | 10,311 | 689 | 6,516 | 17,893 | 14,720 |
| Spades | 2,871 | | | 184 | 252 | | 3,307 | | | 96 | 1,399 | 1,495 | 1,812 |
| Stencils, complete ... boxes | 422 | | | 185 | 22 | | 629 | 1 | 6 | 3 | 78 | 88 | 541 |
| Tents: | | | | | | | | | | | | | |
| Common | 6,200 | | | 2,226 | 1,291 | | 9,717 | 671 | 584 | 699 | 1,638 | 3,592 | 6,125 |
| Conical wall | 1,882 | | | 343 | 248 | | 2,473 | 54 | | 136 | 243 | 433 | 2,040 |
| Hospital | 4,271 | | | 3,191 | 642 | 27 | 8,131 | 254 | 229 | 1,357 | 2,426 | 4,266 | 3,865 |
| Shelter, halves | 18,311 | | | 1,955 | 3,156 | 1 | 23,423 | 47 | | 776 | 13,225 | 14,058 | 9,365 |
| Wall | 1,938 | | | 1,004 | 304 | 84 | 3,330 | 280 | 70 | 1,059 | 569 | 1,978 | 1,352 |
| Tent flies: | | | | | | | | | | | | | |
| Hospital | 3,989 | | | 3,364 | 657 | 140 | 8,150 | 265 | 322 | 1,594 | 2,897 | 5,078 | 3,075 |
| Wall | 1,718 | | | 984 | 311 | 11 | 3,024 | 139 | 70 | 650 | 645 | 1,504 | 1,520 |
| Tent lines ... pounds | 386 | | | 998 | | | 1,384 | | | 186 | 414 | 600 | 784 |
| Tent overcoats | 16,300 | | | | 200 | | 16,500 | | 2,500 | | 1,512 | 4,012 | 12,488 |
| Tent pins: | | | | | | | | | | | | | |
| Large and small | 234,464 | | | 316,259 | 158,394 | 3,163 | 712,280 | 1,464 | 1,056 | 123,729 | 204,269 | 330,518 | 381,762 |
| Shelter | 89,087 | | | 42,406 | 5,433 | 2,512 | 139,438 | 64 | | 2,906 | 55,167 | 58,137 | 81,301 |
| Tent poles, all kinds | 86,131 | | | 79,471 | 23,129 | 2,520 | 191,251 | 3,849 | 8,374 | 25,938 | 23,925 | 62,086 | 129,165 |
| Tent-pole ferrules | | | | 5,250 | | | 5,250 | | | | | | 5,250 |
| Tent slips | 1,150 | | | 8,435 | 2,500 | | 12,085 | | | | 850 | 850 | 11,235 |
| Tent stoves | 2,094 | | | 46 | 429 | | 2,569 | | 895 | 276 | 15 | 1,186 | 1,383 |
| Tent stovepipe ... joints | 7,975 | | | 36 | 3,968 | 198 | 12,177 | 16 | 1,080 | 1,803 | 109 | 3,008 | 9,169 |
| Tent straps | 67 | | | 38 | | | 105 | | | 12 | 35 | 47 | 58 |
| Tent tripods | 506 | | | 646 | 398 | 21 | 1,571 | 4 | | 8 | 248 | 255 | 1,316 |
| Trumpets | 4,851 | | | 1,568 | 363 | 4 | 6,786 | 9 | 441 | 111 | 2,203 | 2,764 | 4,022 |
| Whistles | 978 | | | 1,243 | 43 | | 2,264 | 9 | 21 | 97 | 988 | 1,115 | 1,149 |
| *Materials.* | | | | | | | | | | | | | |
| Buttons, coat: | | | | | | | | | | | | | |
| Large | 609,608 | | | 963 | 496 | 38 | 611,105 | 9,625 | | | 145,422 | 155,047 | 456,058 |
| Small | 311,726 | | | 725 | 542 | 30 | 313,023 | 10,475 | | 12 | 126,511 | 136,998 | 176,025 |
| Cloth: | | | | | | | | | | | | | |
| Dark blue ... yards | | | | 65 | | | 65 | 4 | | | 11 | 15 | 50 |
| Khaki ... do | 22,616 | | | 1,809 | | | 24,425 | 6,736 | | 15 | 1,569 | 8,320 | 16,105 |
| Drill, white ... do | 12,481 | | | | | | 12,481 | 4,370 | | 68 | 1,582 | 6,020 | 6,461 |
| Flannel, dark blue ... do | | | | 40 | | | 40 | | | | | | 40 |
| Kersey ... do | | | | 65 | | | 65 | 3 | | | 11 | 14 | 51 |

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
*Washington, D. C., September 20, 1900.*

GENERAL: I have the honor to submit the following report of the construction and repair division of this office for the fiscal year ended June 30, 1900:

| | |
|---|---|
| Congress, in the act making appropriations for the support of the Army for the fiscal year 1899-1900, provided under the head of "Barracks and quarters" | $3,000,000 |
| And in the urgent deficiency act approved February 9, 1900, there was appropriated under the head of "Barracks and quarters" | 1,000,000 |
| Total | 4,000,000 |

The appropriation of $1,000,000 above referred to was made with the proviso—

> That from the foregoing amount, if in the judgment of the Secretary of War the emergency exists, the sum of $130,000, or so much thereof as in his discretion may be necessary, shall be used for the purchase of a site or sites for the location of barracks for the accommodation of a garrison in charge of fortifications.

Expenditures have been made or authorized from these funds as follows:

| | |
|---|---|
| Authorized for construction and repair of buildings at Army posts and depots | $2,051,841.12 |
| Expended for temporary buildings, tent floors, etc., at camps in the United States | 88,201.63 |
| Expended for material and labor to construct shelter for troops in Cuba, Porto Rico, Alaska, and the Philippines, so far as reported | 668,520.46 |
| Expended for rents and lodgings in connection with the recruiting service (Appendix A) | 67,519.15 |
| Expended for rent of storehouses, offices, barracks, quarters, camp ground, etc. (Appendix B) | 258,290.89 |
| Expended in payment of employees (Appendix C) | 6,539.09 |
| Expended for purchase of land near Galveston, Tex., for site of new post, Fort Crockett | 126,000.00 |
| Balance June 30, 1900 | 733,087.66 |
| Total | 4,000,000.00 |

*Recapitulation of expenditures authorized from the appropriations for "Barracks and quarters, 1899–1900," for the construction and repair of buildings at permanent posts and depots.*

| Department, depot, etc. | Construction. | Repairs. | Total. |
|---|---|---|---|
| Department of the East | $819,631.71 | $204,094.17 | $1,023,725.88 |
| Department of the Lakes | 17,877.25 | 102,639.89 | 120,517.14 |
| Department of Texas | 85,941.50 | 65,366.15 | 151,307.65 |
| Department of Dakota | 10,961.01 | 66,338.84 | 77,299.85 |
| Department of the Missouri | 240,885.63 | 170,960.89 | 411,846.52 |
| Department of the Colorado | 16,225.55 | 62,389.99 | 78,615.54 |
| Department of California | 45,126.72 | 45,133.19 | 90,259.91 |
| Department of the Columbia | 32,021.53 | 16,195.40 | 48,216.93 |
| Jeffersonville depot | 14,477.20 | 3,809.00 | 18,286.20 |
| New York depot | | 933.90 | 933.90 |
| Philadelphia depot | 20,515.00 | 3,198.57 | 23,713.57 |
| St. Louis depot | | 2,281.15 | 2,281.15 |
| Fort Totten | | 4,695.88 | 4,695.88 |
| Hot Springs Army and Navy Hospital | | 141.00 | 141.00 |
| Total | 1,303,663.10 | 718,178.02 | 2,051,841.12 |

The following list shows the different buildings which have been authorized to be constructed at the various posts, the cost thereof being included in the foregoing statement under the head of "Construction."

| Post. | Designation. | Material. | Amount authorized. |
|---|---|---|---|
| *Department of the East.* | | | |
| Fort Adams | Additions to and alterations in Light Battery barrack. | Brick | $18,560.00 |
| | Plumbing | | 3,790.00 |
| | Subsistence storehouse | Brick | 10,581.25 |
| | Stable for 30 horses | do | 7,000.00 |
| | Plumbing | | 500.00 |
| | Wagon shed | Frame | 1,824.00 |
| | Changing new guardhouse into administration building. | Brick | 4,725.25 |
| | Plumbing | | 237.00 |
| Fort Banks | Fitting old building for guardhouse | | 644.10 |
| | Barracks (see Military posts appropriation) | Frame | |
| | Plumbing | | 2,790.00 |
| | Two double sets officers' quarters | Frame | 21,200.00 |
| | Plumbing | | 2,200.00 |
| | Single set officers' quarters | Frame | 6,900.00 |
| | Plumbing | | 700.00 |
| Fort Caswell | Bath house | Frame | 95.00 |
| | Privy | do | 20.00 |
| | Temporary schoolroom | do | 200.00 |
| | Additions to officers' quarters | do | 240.00 |
| Fort Columbus | Inclosure for crematory | do | 236.24 |
| Fort Dade | Administration building | do | 2,760.00 |
| | Bakehouse | do | 1,050.00 |
| | Shop building | do | 1,000.00 |
| | Stable and wagon shed | do | 2,800.00 |
| | Oil house | do | 300.00 |
| | Addition to storehouse | do | 900.00 |
| Fort Du Pont | Single set temporary officers' quarters | do | 2,368.00 |
| | Plumbing | | 174.00 |
| | Temporary wagon shed | Frame | 51.28 |
| | 2 barracks (see Military posts appropriation) | do | |
| | Plumbing | | 3,500.00 |
| | Electric wiring | | 700.00 |
| | 2 double sets noncommissioned officers' quarters. | Frame | 7,404.00 |
| | Plumbing | | 900.00 |
| | Electric wiring | | 175.00 |
| | Administration building | Frame | 3,913.00 |
| | Plumbing | | 82.00 |
| | Electric wiring | | 100.00 |
| | Stable and wagon room | Frame | 3,273.00 |
| | Guardhouse | do | 6,782.00 |
| | Plumbing | | 875.00 |
| | Electric wiring | | 125.00 |
| | Bakehouse | Frame | 1,214.00 |
| | Plumbing | | 37.00 |
| | Electric wiring | | 50.00 |
| | 6 single sets officers' quarters | Frame | 40,403.00 |
| | Plumbing | | 3,675.00 |
| | Electric wiring | | 700.00 |
| | Hospital | Frame | 17,270.00 |
| | Plumbing | | 1,105.00 |
| | Electric wiring | | 300.00 |
| | Hospital steward's quarters | Frame | 2,301.00 |
| | Plumbing | | 235.00 |
| | Electric wiring | | 75.00 |
| Fort De Soto | 3 single sets officers' quarters | Frame | 14,347.00 |
| | Plumbing | | 1,719.00 |
| | Electric wiring | | 522.00 |
| | 1 barrack for 100 men | Frame | 13,860.15 |
| | Electric wiring | | 738.50 |
| | Mess room and kitchen | Frame | 3,380.00 |
| | Plumbing and wiring | | 303.90 |
| | Storehouse | Frame | 3,900.00 |
| | Electric wiring | | 163.25 |
| | Guardhouse | Frame | 2,987.74 |
| | Plumbing | | 407.10 |
| | Electric wiring | | 81.00 |
| | Administration building | Frame | 3,787.00 |
| | Plumbing | | 159.00 |
| | Electric wiring | | 159.60 |
| | Bakehouse | Frame | 1,506.00 |
| | Electric wiring | | 50.50 |
| | Stable | Frame | 3,223.00 |
| | Shop building | do | 1,196.04 |

| Post. | Designation. | Material. | Amount authorized. |
|---|---|---|---|
| *Department of the East*—Continued. | | | |
| Fort De Soto | Double set noncommissioned staff officers' quarters. | Frame | $3,759.00 |
| | Plumbing | | 682.50 |
| | Electric wiring | | 141.40 |
| | Hospital | Frame | 8,558.00 |
| | Plumbing | | 873.00 |
| | Electric wiring | | 295.00 |
| | Hospital steward's quarters | Frame | 2,156.00 |
| | Plumbing | | 405.50 |
| | Electric wiring | | 92.50 |
| Fort Ethan Allen | Corrals | | $543.00 |
| Fort Greble | Plumbing in new guardhouse | | 408.00 |
| | Conversion of temporary barracks into storehouse. | | 2,656.72 |
| | Barrack (see Military posts appropriation) | Frame | |
| | Plumbing | | 2,674.00 |
| | Electric wiring | | 435.00 |
| | Two single sets officers' quarters | Frame | 12,400.00 |
| | Plumbing | | 1,089.00 |
| | Elecric wiring | | 210.00 |
| | One single set noncommissioned staff officers' quarters. | Frame | 2,025.00 |
| | Plumbing | | 350.00 |
| | Electric wiring | | 70.00 |
| | Wall lockers in barrack | | 1,494.00 |
| Fort Hamilton | Double set noncommissioned staff officers' quarters. | Brick | 5,195.00 |
| | Temporary building for motor carriage | | 424.43 |
| | Conversion of pavilion ward into band barrack. | | 167.92 |
| | Picket guardhouse | Brick | 1,300.00 |
| Fort Hancock | Completion of ordnance storehouse | Brick | 1,080.56 |
| | Completion of lavatory | | 367.36 |
| | Converting powder magazine into plumbers' quarters. | | 579.86 |
| | Addition to garbage cremator | | 350.00 |
| | Subsistence storehouse | Brick | 11,732.00 |
| | Oil house | Frame | 358.67 |
| Fort Howard | Temporary storehouse | do | 947.30 |
| | 2 barracks (see Military posts appropriation) | do | |
| | Plumbing | | 5,038.00 |
| | Electric wiring | | 612.00 |
| | 2 double sets noncommissioned staff quarters | Frame | 7,400.00 |
| | Plumbing | | 1,062.00 |
| | Electric wiring | | 148.00 |
| | 6 single sets officers' quarters | Frame | 42,000.00 |
| | Plumbing | | 4,134.00 |
| | Electric wiring | | 612.00 |
| | Administration building | Frame | 3,900.00 |
| | Plumbing | | 155.00 |
| | Electric wiring | | 82.00 |
| | Stable and wagon room | Frame | 3,350.00 |
| | Guardhouse | do | 6,890.00 |
| | Plumbing | | 959.00 |
| | Electric wiring | | 106.00 |
| | Bakehouse | Frame | 1,350.00 |
| | Plumbing | | 45.00 |
| | Electric wiring | | 29.00 |
| | Hospital | Frame | 17,600.00 |
| | Plumbing | | 1,430.00 |
| | Electric wiring | | 233.00 |
| | Hospital steward's quarters | Frame | 2,300.00 |
| | Plumbing | | 389.00 |
| | Electric wiring | | 51.00 |
| | Temporary office building | Frame | 95.00 |
| Fort Hunt | Completing temporary buildings | do | 1,217.26 |
| | Two double sets noncommissioned staff officers' quarters. | Frame | 7,200.00 |
| | Plumbing | | 900.00 |
| | Electric wiring | | 100.00 |
| | Coal shed | Frame | 1,697.00 |
| | Administration building | do | 3,800.00 |
| | Plumbing | | 170.00 |
| | Electric wiring | | 30.00 |
| | Stable | Frame | 3,275.00 |
| | Oil house | do | 465.00 |
| | Remodeling temporary buildings for storehouses, etc. | do | 2,800.00 |
| | Lavatory | do | 2,205.00 |
| | Plumbing | | 1,975.00 |
| | Wall lockers in buildings | | 975.00 |
| Madison Barracks | Magazine | Brick | 750.00 |
| | Coal shed | Frame | 1,350.00 |

| Post. | Designation. | Material. | Amount authorized. |
|---|---|---|---|
| *Department of the East*—Continued. | | | |
| Fort McPherson | Connecting storehouses No. 29 and 30, to increase storage facilities. | | $2,797.00 |
| | Removing temporary hospital buildings and converting same into storehouses, etc. | | 6,425.00 |
| Fort Michie | 1 barrack for 30 men | Frame | 5,650.00 |
| | Officers' quarters | do | 3,450.00 |
| | Temporary hospital | do | 4,650.00 |
| | Stable and wagon shed | do | 2,550.00 |
| | Quartermaster and subsistence storehouse | do | 4,250.00 |
| | Extra work on barrack and hospital | | 375.00 |
| Fort Monroe | Third story on barrack No. 5 | Brick | 36,682.36 |
| | Band stand | Frame | 184.80 |
| Fort Morgan | Boathouse | do | 311.75 |
| | Oil house | do | 250.00 |
| | 2 temporary barracks and kitchen | do | 3,320.00 |
| | Wagon shed | do | 41.00 |
| | Barrack | do | 14,196.16 |
| | Electric wiring | | 150.00 |
| | Double set noncommissioned staff officers' quarters. | Frame | 4,676.40 |
| | Plumbing | | 257.00 |
| | Electric wiring | | 67.00 |
| | Bakery | Frame | 1,159.86 |
| | Plumbing | | 50.00 |
| | Electric wiring | | 40.00 |
| | 2 additions to storehouse | Frame | 3,232.25 |
| | 2 lavatories | do | 3,667.71 |
| | Plumbing | | 4,300.00 |
| | Electric wiring | | 100.00 |
| | Plumbing, etc., to complete existing buildings. | | 2,248.00 |
| | Mess hall | Frame | 3,170.00 |
| | Plumbing | | 100.00 |
| | Electric wiring | | 35.00 |
| | 2 single sets officers' quarters | Frame | 8,960.13 |
| | Plumbing | | 380.00 |
| | Electric wiring | | 150.00 |
| | Ordnance storehouse | Frame | 1,886.49 |
| | Coal shed | do | 3,804.13 |
| | Bath house and piers | do | 500.00 |
| Fort Mott | 1 temporary barrack, addition to and clapboarding existing barrack, and extending mess hall. | | 3,765.00 |
| | Addition to coal shed | Frame | 97.50 |
| | Wagon shed | do | 127.87 |
| | Bath house | do | 1,224.00 |
| | Earth closet | do | 400.00 |
| Fort Myer | Shed over picket lines to shelter animals | do | 2,437.00 |
| | Post-office building | Brick | 1,623.00 |
| | Plumbing | | 211.00 |
| | Electric wiring | | 40.00 |
| | Quartermaster's storehouse | Brick | 9,500.00 |
| Fort Myer (signal corps post) | Wagon shed | Frame | 2,375.00 |
| | Temporary stable | do | 873.00 |
| Fort Pickens | 2 single sets officers' quarters and 1 barrack | Frame | 11,750.00 |
| | Plumbing | | 662.00 |
| | Barrack | Frame | 11,000.00 |
| | Guardhouse | do | 3,000.00 |
| | Plumbing | | 450.00 |
| | Ordnance storehouse | Frame | 3,815.00 |
| | Oil house | do | 1,075.00 |
| Plattsburg Barracks | Shed over coal scales | Frame | 364.09 |
| Fort Popham | Ordnance storehouse | do | 489.00 |
| Fort Preble | Barrack (see Military posts appropriation): | | |
| | Plumbing | | 2,572.55 |
| | Electric wiring | | 325.00 |
| | Double set officers' quarters | Brick | 11,280.00 |
| | Electric wiring | | 225.00 |
| | Plumbing | | 825.85 |
| | Guardhouse | Brick | 6,725.00 |
| | Plumbing | | 825.00 |
| | Electric wiring | | 100.00 |
| Fort Rodman | Barracks (see Military posts appropriation) | Frame | |
| | Extra work on same | | 311.54 |
| Fort Schuyler | Quartermaster's stable | Brick | 5,215.00 |
| | Shelter for hose reels and lawn mowers | Frame | 438.00 |
| | Addition to noncommissioned staff officers' quarters. | Brick | 641.58 |
| | Bath house and float | Frame | 625.00 |
| Fort Screven | Temporary barracks | do | 1,500.00 |
| | Plumbing to complete existing buildings | | 3,662.00 |
| | Fire-apparatus house | Frame | 500.00 |
| | Barrack | do | 9,995.60 |
| | Electric wiring | | 276.10 |

| Post. | Designation. | Material. | Amount authorized. |
|---|---|---|---|
| *Department of the East*—Continued. | | | |
| Fort Screven | Lavatory | Frame | $1,900.00 |
| | Plumbing | | 1,814.23 |
| | Electric wiring | | 68.35 |
| | Double set noncommissioned staff officers' quarters. | Frame | 3,856.00 |
| | Plumbing | | 417.23 |
| | Electric wiring | | 94.10 |
| | 2 single sets officers' quarters | Frame | 10,679.00 |
| | Plumbing | | 793.10 |
| | Electric wiring | | 114.80 |
| | 2 detached mess halls and kitchens for barrack | Frame | 5,650.00 |
| | Plumbing | | 255.20 |
| | Electric wiring | | 78.90 |
| Fort Strong | Storehouse at wharf | Frame | 750.00 |
| | 2 barracks, 1 double officers' quarters, 1 mess hall (temporary). | do | 3,200.00 |
| Fort St. Philip | Temporary hospital | do | 2,665.00 |
| | Stable | do | 170.00 |
| Fort Sumter | Barrack | do | 3,805.00 |
| Fort Terry | Coal shed | do | 1,355.49 |
| | Oil house | do | 425.00 |
| | Cellar under storehouse | | 857.90 |
| | Plumbing in existing buildings | | 3,600.00 |
| | Lavatory addition to guardhouse | Frame | 200.00 |
| | Plumbing | | 475.00 |
| | Wall lockers in barrack | | 877.50 |
| Fort Wadsworth | Water-closet building | Brick | 1,102.00 |
| | Plumbing | | 1,260.00 |
| | Guardhouse | Brick | 3,394.00 |
| | Plumbing | | 158.00 |
| Fort Warren | Ordnance storehouse | Brick | 2,398.00 |
| | Garbage crematory | Iron | 1,200.00 |
| Washington Barracks | Light battery stable | Brick | 13,774.00 |
| | Converting temporary stable into stable for siege battery. | Frame | 3,049.89 |
| | Converting exchange building into blacksmith shop. | | 354.47 |
| | Water-closet building | Brick | 1,893.00 |
| | Stable and ambulance shed | do | 2,000.00 |
| | Plumbing | | 190.00 |
| | Light battery stable | Brick | 10,284.00 |
| | Plumbing | | 410.00 |
| | Remodeling building for shop | | 150.00 |
| | Addition to gun shed | Brick | 3,583.00 |
| | Plumbing | | 25.00 |
| Fort Washington | Storage shed on wharf | Frame | 375.00 |
| | 6 single sets officers' quarters | do | 38,303.49 |
| Fort Williams | Wagon shed addition to stable | do | 418.00 |
| | Barrack (see Military posts appropriation) | Brick | |
| | Plumbing | | 2,825.00 |
| | Double set officers' quarters | Brick | 11,454.00 |
| | Plumbing | | 950.00 |
| | Double set noncommissioned staff officers' quarters. | Frame | 6,244.00 |
| | Plumbing | | 595.00 |
| Fort Wood | 2 barracks | Frame | 9,459.00 |
| Total | | | 819,631.71 |
| *Department of the Lakes.* | | | |
| Columbus Barracks | Temporary bath house | Frame | 450.00 |
| | Lavatory | Brick | 3,800.00 |
| | Plumbing | | 2,541.55 |
| | Heating | | 625.00 |
| | Gas piping | | 50.00 |
| | Enlarging guardhouse | Brick | 8,019.00 |
| | Plumbing | | 603.00 |
| Fort Thomas | Bath house | Frame | 1,213.30 |
| | Coal shed | do | 290.00 |
| Fort Wayne | Band stand | do | 285.40 |
| Total | | | 17,877.25 |
| *Department of Texas.* | | | |
| Fort Clark | Gun shed | Frame | 360.00 |
| Fort Crockett | Oil house (temporary) | do | 72.00 |
| | Storehouse (temporary) | do | 606.57 |
| | Dormitory (temporary) | do | 840.54 |
| | Mess hall (temporary) | do | 502.32 |
| | Barrack | do | 10,376.00 |
| | Electric wiring | | 385.00 |

| Post. | Designation. | Material. | Amount authorized. |
|---|---|---|---|
| *Department of Texas*—Cont'd. | | | |
| Fort Crockett | 4 single sets noncommissioned staff quarters | Frame | $6,312.00 |
| | Plumbing | | 860.00 |
| | Electric wiring | | 480.00 |
| | Mess hall | Frame | 2,475.00 |
| | Plumbing | | 86.00 |
| | Electric wiring | | 93.00 |
| | Lavatory | Frame | 1,539.00 |
| | Plumbing | | 1,816.48 |
| | Electric wiring | | 93.00 |
| | Administration building | Frame | 2,981.00 |
| | Plumbing | | 65.00 |
| | Electric wiring | | 93.00 |
| | Stable and wagon room | Frame | 2,182.00 |
| | Guardhouse | do | 2,393.00 |
| | Plumbing | | 256.00 |
| | Electric wiring | | 55.00 |
| | Bakehouse | Frame | 964.00 |
| | Plumbing | | 28.00 |
| | Electric wiring | | 55.00 |
| | 5 single sets officers' quarters | Frame | 25,077.00 |
| | Plumbing | | 2,125.00 |
| | Electric wiring | | 850.00 |
| | Hospital | Frame | 5,973.00 |
| | Plumbing | | 567.00 |
| | Electric wiring | | 240.00 |
| | Hospital-steward's quarters | Frame | 1,578.00 |
| | Plumbing | | 215.00 |
| | Electric wiring | | 120.00 |
| Camp Hawley (temporary buildings). | Wagon shed and stable | Frame | 447.21 |
| | Barrack | do | 2,421.39 |
| | Hospital | do | 759.67 |
| | Commissary and quartermaster's storehouse | do | 394.49 |
| | Bachelor officers' quarters | do | 264.38 |
| | Commanding officer's quarters | do | 638.62 |
| | 2 single sets officers' quarters | do | 1,598.23 |
| | Guardhouse | do | 447.47 |
| | Bath house | do | 773.92 |
| | Bakehouse | do | 457.91 |
| | Mess hall | do | 1,443.98 |
| Fort Sam Houston | Gun shed | do | 1,497.50 |
| Fort San Jacinto | Temporary buildings at 10-inch gun battery: | | |
| | Storehouse | do | 416.17 |
| | Oil house | do | 46.39 |
| | Barracks | do | 586.50 |
| | Mess house | do | 355.19 |
| Fort Travis | Oil house (temporary) | do | 72.00 |
| | Storehouse (temporary) | do | 606.57 |
| Total | | | 85,941.50 |
| *Department of Dakota.* | | | |
| Fort Assinniboine | Hose house | Frame | 1,145.00 |
| Fort Keogh | Stable (Camp Merritt) | | 687.50 |
| | 1 set noncommissioned staff quarters | Frame | 2,165.00 |
| Fort Lincoln | Temporary office building | do | 339.75 |
| Fort Meade | Plumbing in new stone barracks | | 2,391.00 |
| | Plumbing in new officers' quarters | | 1,622.91 |
| Fort Snelling | 1 set noncommissioned staff officers' quarters | Brick | 1,929.00 |
| Fort Yates | Addition to cavalry stable | Frame | 680.85 |
| Total | | | 10,961.01 |
| *Department of the Missouri.* | | | |
| Fort Crook | Oil house | Frame | 351.00 |
| | Ordnance storehouse | do | 1,998.00 |
| Jefferson Barracks | Administration building | Brick | 15,960.00 |
| | Plumbing | | 700.00 |
| | Electric wiring | | 309.00 |
| | Storehouse addition | Brick | 12,300.00 |
| | Electric wiring | | 40.00 |
| | Oil house | Frame | 395.00 |
| Fort Leavenworth | Addition to officers' quarters | Brick | 277.93 |
| | Quartermaster's stables | do | 8,375.00 |
| | Plumbing | | 248.00 |
| | 8 double officers' quarters | Brick | 112,000.00 |
| | Plumbing | | 6,448.00 |
| | Electric wiring | | 1,050.00 |
| | Bachelor officers' quarters | Brick | 27,547.00 |
| | Plumbing | | 4,460.00 |
| | Electric wiring | | 898.00 |
| | 2 cavalry stables | Brick | 25,450.00 |
| | Plumbing | | 1,488.00 |

| Post. | Designation. | Material. | Amount authorized. |
|---|---|---|---|
| *Department of the Missouri*—Continued. | | | |
| Fort Riley | 2 fire apparatus buildings | Frame | $200.00 |
| Fort Robinson | Ordnance storehouse | do | 1,850.00 |
| | Quartermaster's storehouse | do | 3,860.00 |
| | Oil house | do | 535.00 |
| | Addition to shop building | do | 145.70 |
| | Meat market building | do | 603.62 |
| | 3 lavatories | do | 6,900.00 |
| | Plumbing | | 5,829.00 |
| | 3 blacksmith shops | Frame | 667.38 |
| Total | | | 240,885.63 |
| *Department of the Colorado.* | | | |
| Fort Apache | Blacksmith and paint shop | Frame | 1,163.00 |
| Fort D. A. Russell | Forage house | Brick | 4,886.00 |
| Fort Duchesne | Quartermaster's stable and wagon shed | Frame | 2,839.71 |
| | Cavalry stable | do | 1,420.00 |
| | Addition to officers' quarters | do | 3,079.00 |
| Fort Huachuca | 1 hay shed | do | 2,400.00 |
| Fort Mackenzie | Root cellar, etc | | 50.00 |
| | Coal house and sheds | Frame | 246.26 |
| | Quartermaster's corral | do | 45.70 |
| | Wagon shed addition to stables | do | 95.88 |
| Total | | | 16,225.55 |
| *Department of California.* | | | |
| Alcatraz Island | Temporary buildings for military prisoners | Frame | 18,872.98 |
| | Temporary building for Signal Corps | do | 250.00 |
| Fort Baker | 3 temporary buildings | do | 1,685.20 |
| | Headquarters' building (temporary) | do | 699.50 |
| | Wagon, animal, and forage shed (temporary) | do | 300.00 |
| Fort Mason | Addition to water-closet No. 7 | do | 200.00 |
| | Reel house | do | 61.00 |
| | Temporary building for Signal Corps | do | 250.00 |
| Presidio of San Francisco | Subsistence storehouse | Brick | 954.00 |
| | 90 wall lockers for barracks | | 450.00 |
| United States Army General Hospital, Presidio of San Francisco. | Guardhouse | Frame | 6,234.50 |
| | Improvements on existing buildings | | 6,894.54 |
| Fort Point | Ordnance storehouse | Brick | 8,275.00 |
| Total | | | 45,126.72 |
| *Department of the Columbia.* | | | |
| Boise Barracks | Blacksmith shops | Frame | 305.68 |
| | Granary | do | 420.00 |
| Fort Casey | Temporary storehouse | do | 250.00 |
| | Outbuildings and improvements in barracks and officers' quarters. | do | 971.00 |
| | Temporary shelter for troops | do | 68.55 |
| | Plumbing in officers' quarters | | 256.00 |
| Fort Flagler | Temporary shelter for troops | Frame | 446.30 |
| | Barrack (see Military posts appropriation) | do | |
| | Plumbing | | 1,025.00 |
| | Electric wiring | | 900.00 |
| | 4 single sets officers' quarters | Frame | 21,375.00 |
| | Plumbing | | 1,025.00 |
| | Electric wiring | | 1,000.00 |
| | Outhouses for and improvements on new buildings. | Frame | 3,109.00 |
| Fort Wright | Corral fence | do | 230.00 |
| Fort Stevens | Woodshed | do | 640.00 |
| Total | | | 32,021.53 |
| *Depots and independent posts.* | | | |
| Jeffersonville depot | Blacksmith shop and testing room | Frame | 277.20 |
| | Storehouse | Iron | 14,200.00 |
| Total | | | 14,477.20 |
| Philadelphia depot | Storage shed | Iron | 225.00 |
| | Building for sponging plant and cloth inspection. | Brick | 19,175.00 |
| | Plumbing | | 1,115.00 |
| Total | | | 20,515.00 |

### MILITARY POSTS APPROPRIATION.

"For the construction of buildings at, and the enlargement of such military posts as in the judgment of the Secretary of War may be necessary, and for the erection of barracks and quarters for the artillery in connection with the adopted project for seacoast defense," the act making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1900, appropriated $670,000.

The law provided that of this sum there might be used for the purchase of suitable building sites $100,000.

It was further provided that there should be used "for the erection of barracks, quarters, gun sheds, and stables for one battery of light artillery at Fort Leavenworth, Kans.," $50,000.

The following table shows the amounts apportioned to each post for purchase of land and construction of buildings from this appropriation:

| Post. | Buildings, etc. | Material. | Allotments. | Total. |
|---|---|---|---|---|
| Fort Adams, R. I | Dormitories over and remodeling casemates. | Brick | $56,240.00 | |
| | Plumbing | | 9,843.00 | |
| | 1 double noncommissioned staff officers' quarters. | Brick | 3,800.00 | |
| | Plumbing | | 625.00 | |
| | Gas piping | | 10.00 | |
| | Electric wiring | | 50.00 | |
| | | | | $70,568.00 |
| Fort Banks, Mass | Barrack for 100 men | Frame | | 21,143.00 |
| Fort Caswell, N. C | 1 barrack for 100 men | do | 11,912.50 | |
| | Detached mess room and kitchen | do | 2,989.00 | |
| | Plumbing | | 199.50 | |
| | 2 single officers' quarters | Frame | 9,854.50 | |
| | Plumbing | | 994.00 | |
| | 1 double set noncommissioned staff officers' quarters. | Frame | 4,157.00 | |
| | Plumbing | | 495.00 | |
| | | | | 30,601.50 |
| Fort Casey, Wash | 1 barrack for 16 men | Frame | 3,569.00 | |
| | 1 single officers' quarters | do | 2,951.00 | |
| | | | | 6,520.00 |
| Fort Columbia, Oreg | 1 barrack for detachment | do | | 947.40 |
| Fort Dade, Fla | 1 single officers' quarters | do | 3,000.00 | |
| | 1 barrack for 65 men | do | 6,040.00 | |
| | | | | 9,040.00 |
| Fort Du Pont, Del | 2 barracks for 100 men each | do | | 46,202.00 |
| Fort Flagler, Wash | 1 double noncommissioned staff officers' quarters. | do | 3,473.36 | |
| | Plumbing | | 540.00 | |
| | Fuel shed | Frame | 1,090.25 | |
| | Lavatory | do | 1,991.99 | |
| | Plumbing | | 2,392.10 | |
| | 1 barrack for 100 men | Frame | 13,675.00 | |
| | | | | 23,162.70 |
| Fort Fremont, S. C | 3 sets officers' quarters and 1 barrack for 65 men. | do | 11,967.00 | |
| | 2 single noncommissioned staff officers' quarters. | do | 2,798.00 | |
| | Hospital steward's quarters | do | 1,292.84 | |
| | Guardhouse | do | 1,390.18 | |
| | Commissary and quartermaster's storehouse. | do | 2,681.26 | |
| | Addition to mess building | do | 458.94 | |
| | Alterations in hospital | | 1,265.32 | |
| | 10 cisterns for new buildings | | 1,500.00 | |
| | | | | 23,353.54 |
| Fort Greble, R. I | 1 barrack for 100 men | Frame | | 23,623.00 |
| Fort Howard, Md | 2 barracks for 100 men each | do | | 45,400.00 |
| Fort Leavenworth, Kans | 1 artillery barrack for 120 men | Brick | 24,869.00 | |
| | Plumbing | | 2,200.00 | |
| | Electric wiring | | 495.00 | |
| | 1 light artillery stable for 134 horses. | Brick | 14,782.00 | |
| | Plumbing | | 743.00 | |
| | Light battery gun shed | Frame | 6,481.27 | |
| | | | | 49,570.27 |
| Fort Pickens, Fla | 1 double set noncommissioned officers' quarters. | do | | 2,510.39 |

| Post. | Buildings, etc. | Material. | Allotments. | Total. |
|---|---|---|---|---|
| Fort Preble, Me | 1 barrack for 100 men | Brick | $26,980.00 | |
| | Purchase of land | | 10,029.75 | $37,009.75 |
| Fort Rodman, Mass | 1 barrack for 20 men | Frame | | 3,399.59 |
| Fort St. Philip, La | 1 barrack for 60 men | do | 8,211.00 | |
| | 2 single officers' quarters | do | 5,065.00 | |
| | Guardhouse | do | 3,424.00 | |
| | Ordnance storehouse | do | 2,565.25 | 19,265.25 |
| Fort Schuyler, N. Y | 1 double noncommissioned staff officers' quarters. | Brick | 3,835.00 | |
| | Subsistence storehouse | do | 8,489.00 | |
| | Ordnance storehouses | do | 5,800.00 | 18,124.00 |
| Fort Strong, Mass | Purchase of land | | | 18,714.18 |
| Fort Totten, N. Y | 1 artillery barrack for 120 men | Brick | | 31,136.00 |
| Washington Barracks, D. C | Guardhouse | do | | 7,884.00 |
| Fort Washington, Md | 2 barracks for 100 men each | Frame | | 46,202.77 |
| Fort Williams, Me | Purchase of land | | 50,000.00 | |
| | 1 barrack for 100 men | Brick | 28,897.00 | |
| | Coal shed | Frame | 1,119.63 | 80,016.63 |
| | Printing and advertising | | | 1,611.92 |
| | Balance available for purchase of land and for extra work on above buildings | | | 53,994.01 |
| | Total | | | 670,000.00 |

## APPROPRIATION FOR HOSPITALS.

In the "act making appropriation for the support of the Regular and Volunteer Army for the fiscal year ending June 30, 1900," Congress appropriated "for construction and repair of hospitals at military posts already established and occupied, including the extra duty pay of enlisted men employed on the same, and including also all expenditures for construction and repairs required at the Army and Navy Hospital at Hot Springs, Ark., except quarters for the officers, $275,000: *Provided*, That $25,000 of the foregoing amount be expended in the construction of an addition to the Army and Navy Hospital at Hot Springs, Ark., making thereby a new ward to accommodate fifty beds." Based on estimates approved by the Medical Department, the remaining $250,000 has been apportioned as follows:

| Post. | Amount. |
|---|---|
| *Department of the East.* | |
| Fort Adams | $19,969.07 |
| Fort Barrancas | 791.15 |
| Fort Banks | 26.80 |
| Fort Caswell | 71.13 |
| Fort Columbus | 237.70 |
| Fort Ethan Allen | 159.90 |
| Fort Greble | 15.00 |
| Fort Hamilton | 275.00 |
| Fort Hancock | 89.60 |
| Jackson Barracks | 690.00 |
| Key West Barracks | 20.99 |
| Madison Barracks | 16,963.00 |
| Fort McHenry | 1,211.50 |
| Fort McPherson | 25.00 |
| Fort Monroe | 390.00 |
| Fort Myer | 45.87 |
| Fort Niagara | 121.07 |
| Fort Ontario | 515.66 |
| Plattsburg Barracks | 426.55 |
| Fort Porter | 8,350.61 |
| Fort Preble | 20,269.95 |
| Savannah, Ga | 147.72 |
| Fort Schuyler | 43.40 |
| Fort Screven | 95.00 |
| Fort Slocum | 1,225.00 |
| *Department of the East*—Cont'd. | |
| Sullivans Island | $105.70 |
| Fort Terry | 19,144.10 |
| Fort Trumbull | 203.00 |
| Fort Wadsworth | 2,890.80 |
| Washington Barracks | 13,107.05 |
| Fort Williams | 20,000.00 |
| Fort Wood | 276.00 |
| Total | 127,903.32 |
| *Department of Texas.* | |
| Fort Bliss | 80.99 |
| Fort Clark | 237.49 |
| Fort Ringgold | 131.88 |
| Fort Sam Houston | 2,838.95 |
| Total | 3,289.31 |
| *Department of the Colorado.* | |
| Fort D. A. Russell | 768.55 |
| Fort Douglas | 400.41 |
| Fort Du Chesne | 452.60 |
| Fort Grant | 968.82 |
| Fort Huachuca | 245.85 |

| Post. | Amount. |
|---|---|
| *Department of the Colorado*—Cont'd. | |
| Fort Logan | $334.00 |
| San Carlos | 137.60 |
| Fort Washakie | 52.00 |
| Fort Wingate | 1,152.79 |
| Total | 4,512.65 |
| *Department of the Lakes.* | |
| Fort Brady | 393.00 |
| Columbus Barracks | 2,430.19 |
| Fort Sheridan | 187.89 |
| Fort Thomas | 266.90 |
| Fort Wayne | 5.50 |
| Total | 3,283.48 |
| *Department of Dakota.* | |
| Fort Assinniboine | 565.15 |
| Fort Harrison | 19.00 |
| Fort Keogh | 703.60 |
| Fort Meade | 694.30 |
| Fort Snelling | 1,019.73 |
| Fort Yates | 168.53 |
| Fort Yellowstone | 411.55 |
| Total | 3,581.86 |
| *Department of the Missouri.* | |
| Fort Crook | 3,322.00 |
| Jefferson Barracks | 41.30 |
| Fort Leavenworth | 60,411.75 |
| Fort Logan H. Roots | 55.90 |
| Fort Niobrara | 976.64 |
| Fort Reno | 462.69 |
| Fort Riley | 324.88 |
| *Department of the Missouri*—Cont'd. | |
| Fort Robinson | $727.37 |
| Fort Sill | 1,965.19 |
| Total | 68,287.72 |
| *Department of the Columbia.* | |
| Boise Barracks | 1,563.80 |
| Vancouver Barracks | 1,697.97 |
| Fort Walla Walla | 120.00 |
| Total | 3,381.77 |
| *Department of Porto Rico.* | |
| Aguadilla | 40.00 |
| Albonito | 1,107.49 |
| Cayey | 1,783.98 |
| Mayagüez | 5,000.00 |
| Ponce | 930.16 |
| San Juan | 3,884.10 |
| Total | 12,745.73 |
| *Department of California.* | |
| Alcatraz Island | 307.17 |
| Benicia Barracks | 78.38 |
| Presidio of San Francisco | 1,101.19 |
| Total | 1,486.74 |
| *Miscellaneous hospitals.* | |
| Hot Springs, Ark. (Army and Navy) | 20,226.69 |
| Fort Totten, N. Y | 312.43 |
| Fort Bayard, N. Mex. (general hospital) | 328.65 |
| Total | 20,867.77 |

RECAPITULATION.

| | |
|---|---|
| Department of the East | $127,903.32 |
| Department of the Missouri | 68,287.72 |
| Department of Porto Rico | 12,745.73 |
| Department of the Colorado | 4,512.65 |
| Department of Dakota | 3,581.86 |
| Department of the Columbia | 3,381.77 |
| Department of the Lakes | 3,283.48 |
| Department of Texas | 3,289.31 |
| Department of California | 1,486.74 |
| Miscellaneous hospitals | 20,867.77 |
| Balance unexpended June 30, 1900 | 659.65 |
| Grand total | 250,000.00 |

## APPROPRIATION FOR HOSPITAL STEWARDS' QUARTERS.

In the Army appropriation act for the fiscal year ending June 30, 1900, Congress also appropriated $20,000 for construction of quarters for hospital stewards at military posts already established and occupied, including the extra-duty pay of enlisted men employed on the same. This sum has been apportioned to the posts named below:

| Post. | Amount. | Post. | Amount. |
|---|---|---|---|
| Fort Adams | $210.93 | Angel Island | $3,276.76 |
| Fort Barrancas | 137.15 | Fort Mason | 77.87 |
| Fort Columbus | 67.50 | Presidio of San Francisco, Cal | 219.50 |
| Governors Island | 236.00 | Fort Preble | 217.00 |
| Fort Hancock | 24.99 | Fort Schuyler | 155.00 |
| Fort Hamilton | 47.90 | Fort Slocum | 152.10 |
| Jackson Barracks | 266.53 | St. Francis Barracks | 155.10 |
| Madison Barracks | 123.15 | Fort Totten | 164.34 |
| Fort McHenry | 40.50 | Fort Trumbull | 16.25 |
| Fort McPherson | 294.50 | Washington Barracks | 3,262.95 |
| Fort Monroe | 2,606.02 | Fort Bliss | 27.50 |
| Fort Myer | 800.00 | Fort Clark | 25.50 |
| Fort Niagara | 53.27 | Fort Sam Houston | 197.64 |
| Fort Ontario | 13.65 | Columbus Barracks | 623.50 |
| Fort Porter | 16.00 | Fort Snelling | 2,770.00 |
| Fort Harrison | 10.80 | Fort Wayne | 14.25 |
| Fort Keogh | 113.89 | Fort Assinniboine | 5.61 |
| Fort Meade | 134.40 | Fort Douglas | 17.50 |
| Fort Yates | 32.28 | Fort Grant | 59.03 |
| Fort Yellowstone | 91.43 | Fort Huachuca | 67.79 |
| Jefferson Barracks | 29.00 | Vancouver Barracks | 71.49 |
| Fort Reno | 17.30 | Fort Walla Walla | 46.00 |
| Fort Riley | 101.11 | Hot Springs | 2,571.25 |
| Fort Robinson | 181.79 | Balance June 30, 1900 | 32.33 |
| Fort Sill | 89.10 | | |
| Alcatraz Island | 34.55 | Total | 20,000.00 |

## CONSTRUCTION OF HOSPITALS AND HOSPITAL STEWARDS' QUARTERS.

The following is a list of new buildings authorized to be constructed at various posts. The cost of construction, plumbing, and gaspiping, or electric wiring of these buildings (except the additional ward at Hot Springs, Ark.) is included in the foregoing tables of appropriations for hospitals and hospital stewards' quarters, the cost of heating apparatus for hospitals being defrayed from the appropriation for regular supplies. Of the buildings enumerated, the new hospitals at Fort Adams, Madison Barracks, and Fort Sill, the additions to hospital at Fort Porter, the deadhouse at Fort Sill, the stewards' quarters at Fort Monroe and Hot Springs, and the addition to stewards' quarters at Fort Myer have been reported completed.

| Post. | Designation. | Material. | Amount authorized. |
|---|---|---|---|
| Fort Adams, R. I | Hospital for 24 beds | Brick | $17,562.50 |
| | Plumbing | | 1,300.00 |
| | Gas piping | | 105.00 |
| Madison Barracks, N. Y | Hospital for 24 beds | Brick | 15,250.00 |
| | Plumbing and gas piping | | 1,300.00 |
| Fort McHenry, Md | Mortuary and disinfecting plant | | 856.00 |
| Fort Terry, N. Y | Hospital for 12 beds | Brick | 18,300.00 |
| | Plumbing | | 655.00 |
| | Gas piping | | 150.00 |
| Fort Porter, N. Y | Additions to hospital | Brick | 7,500.00 |
| | Plumbing | | 617.00 |
| | Gas piping | | 24.00 |
| Fort Preble, Me | Hospital for 12 beds | Brick | 18,700.00 |
| | Plumbing | | 1,205.00 |
| Fort Wadsworth, N. Y | Deadhouse | Brick | 2,086.00 |

| Post. | Designation. | Material. | Amount authorized. |
|---|---|---|---|
| Washington Barracks, D. C | Addition to main building of general hospital | Brick | $11,270.00 |
| | Plumbing | | 750.00 |
| | Gas piping | | 210.00 |
| | Electric wiring in hospital buildings | | 300.00 |
| Fort Williams, Me | Hospital for 12 beds | Brick | 18,745.00 |
| | Plumbing | | 1,255.00 |
| Fort Crook, Nebr | Deadhouse | Brick | 2,100.00 |
| | Plumbing | | 214.00 |
| | Gas piping | | 8.00 |
| Fort Leavenworth, Kans | Hospital for 48 beds | Brick | 52,432.00 |
| | Plumbing | | 6,197.00 |
| | Wiring | | 1,000.00 |
| Fort Sill, Okla | Hospital for Apache prisoners | Frame | 1,040.24 |
| Hot Springs Army and Navy Hospital. | New kitchen and alterations in mess room | Brick | 9,076.46 |
| | Plumbing | | 1,023.28 |
| | Gas piping | | 112.00 |
| San Juan, P. R | Laundry building for general hospital | | 1,000.00 |
| Cayey, P. R | Temporary hospital building | | 1,500.00 |
| | Total for new buildings from the general hospital appropriation. | | 193,843.48 |
| Hot Springs Army and Navy Hospital. | Additional ward | Brick | 22,823.50 |
| | Plumbing | | 1,572.00 |
| | Gas piping | | 55.00 |
| | Total from special appropriation | | 24,450.50 |
| Fort Monroe, Va | 1 set hospital stewards' quarters | Brick | 2,277.00 |
| | Plumbing | | 160.00 |
| | Gas piping | | 25.00 |
| Fort Myer, Va | Addition to hospital stewards' quarters | Brick | 700.00 |
| Fort Snelling, Minn | 1 set hospital stewards' quarters | do | 2,600.00 |
| | Plumbing | | 155.00 |
| | Gas piping | | 15.00 |
| Fort McDowell, Cal | 1 set hospital stewards' quarters | Brick | 2,964.00 |
| | Plumbing | | 200.00 |
| | Gas piping | | 75.00 |
| Hot Springs Army and Navy Hospital. | 1 set hospital stewards' quarters | Brick | 2,350.00 |
| | Plumbing | | 200.00 |
| | Gas piping | | 20.00 |
| Washington Barracks, D. C | 1 set hospital stewards' quarters | Brick | 3,172.00 |
| | Total for new buildings from hospital stewards' quarters appropriation. | | 14,913.00 |

## ARMY TRANSPORTATION APPROPRIATION.

The following aggregate expenditures have been authorized or reported:

| | |
|---|---|
| For structural water supply, sewerage and drainage, and for a portion of the plumbing work | $524,732.33 |
| For roads, walks, grading, bridges, etc | 180,195.97 |
| For wharfs | 35,201.03 |
| For miscellaneous purposes | 195,281.91 |
| Total | 935,411.24 |

## REGULAR SUPPLIES APPROPRIATION.

From this appropriation there has been allotted for—

| | |
|---|---|
| Heating apparatus | $187,776.99 |
| Lighting apparatus | 35,565.67 |
| Cooking apparatus | 2,083.32 |
| Repairs to bakeries | 4,277.57 |
| Construction of bakehouses and other buildings enumerated below | 27,436.88 |
| Miscellaneous | 18,636.49 |
| Total | 272,776.92 |

*List of buildings authorized from regular supplies funds.*

| Post. | Designation. | Material. | Amount authorized. |
|---|---|---|---|
| Fort Williams, Me | Bakery | Frame | $1,193.00 |
| | Scales shed | do | 147.71 |
| Fort Mott, N. J | Bakery | do | 1,182.00 |
| Presidio of San Francisco, Cal. | Power house for electric plant | Brick | 14,025.00 |
| Mayaguez, P. R | Bakery | do | 3,840.17 |
| Fort Meade, S. Dak | do | Stone | 4,849.00 |
| Fort Huachuca, Ariz | Hay shed | Corrugated iron | 2,200.00 |
| Total | | | 27,436.88 |

## CONSTRUCTION OF ARTILLERY POSTS.

The allotments made during the year for construction, plumbing, and electric wiring of buildings to shelter garrisons at seacoast fortifications are included in the foregoing lists under the head of "Barracks and quarters" and "Military posts" appropriations. Below will be found a statement of the progress of building operations at each post and a recapitulation of the expenditures authorized for each post from funds of the fiscal year 1899–1900, including heating apparatus from the appropriation for regular supplies, and construction of water and sewer systems, wharfs, roads, walks, grading, etc., from the appropriation for army transportation.

The permanent buildings authorized this year are of frame construction, except at Forts Adams, Totten, Williams, and Preble, where brick is used for certain buildings, as shown in the foregoing tables.

On March 1, 1900, the Secretary of War directed that "the buildings to be erected at once will be constructed without regard to the present, permanent, or temporary strength of batteries; but for the present, at least, about 80 men may be assumed as the number for which separate accommodations should be provided, and until further orders these buildings may be of the same general plan and character of construction as those already constructed at seacoast fortifications."

In the last annual report of the construction and repair division, it was recommended that Congress be asked to raise the limit of cost of barracks and quarters at seacoast defenses. The Secretary of War recommended to Congress that the limit be fixed at $1,200 per man for each man required for one relief to man the guns at each post, up to 83 men, the present permanent strength of a battery, enlisted and commissioned, and for each man required beyond this number at $600 per man; and this provision was enacted into law by the sundry civil act of June 6, 1900, under the head of "Military posts."

### FORT ADAMS, R. I.

On October 30, 1899, contract was made for additions to and alterations in light battery barracks to accommodate a total of 162 men.

In October $3,000 was allotted for removing embankments to provide sites for buildings, the work being completed in December. A subsistence storehouse, a quartermaster's stable for 30 horses, and a wagon shed were contracted for on May 1, 1900. In June, 1900, the work of fitting new guardhouse for use as administration building and the erection of a double set of noncommissioned officers' quarters were commenced. On June 12, 1900, contract was made for constructing dormitories over and remodeling casemates to provide accommodations for three batteries of heavy artillery of 113 men each. The total cost of above work will be $122,915.50.

### FORT BAKER, CAL.

On September 5, 1899, three temporary buildings containing squad room for 24 men, mess hall, and quarters for an officer were completed at a cost of $2,385.20, including sewer, earth closets, etc.

### FORT BANKS, WINTHROP, MASS.

A barrack for 80 men, a double set officers' quarters, a double set noncommissioned staff officers' quarters, a quartermaster's and subsistence storehouse, a hospital, and a set of hospital steward's quarters at this post, on which work was commenced in the previous fiscal year, were completed on December 2, 1899. A building purchased with land for reservation is being utilized as officers' quarters, making a total of three sets of quarters now available.

On June 25, 1900, contracts were made for a barrack for 100 men, 2 double officers' quarters, and 1 single officers' quarters to accommodate another battery of artillery, at a cost of $54,933, including plumbing and heating.

### FORT CASEY (ADMIRALTY HEAD), WASH.

| | |
|---|---|
| A frame barrack for 16 men and a single set of officers' quarters were completed on February 22, 1900, at an approximate cost (including outbuildings and plumbing) of | $6,980.60 |
| For temporary storehouse there was allotted | 250.00 |
| For a board walk and for extension of water and sewer systems | 994.20 |
| Total | 8,224.80 |

### FORT CASWELL, N. C.

At this post there is temporary shelter for about 4 officers and 192 enlisted men. The commencement of permanent construction has been delayed by the difficulty in securing a post site. On August 10, 1899, funds were allotted for filling a portion of marsh to provide sites for barracks and quarters.

| | |
|---|---|
| The total amount expended for this work during the fiscal year was | $14,944.70 |
| On January 8, 1900, there was allotted for sinking a 6-inch artesian well. | 7,000.00 |
| On June 25, 1900, contract was made for permanent buildings for 1 battery, including plumbing and electric wiring, viz, a barrack for 100 men, a detached mess room, 2 single officers' quarters, and 1 double noncommissioned officers' quarters, amounting to | 31,387.50 |
| Total | 53,332.20 |

### FORT COLUMBIA (CHINOOK POINT), OREG.

A temporary barrack for a detachment was completed November 30, 1899, at a cost of $986.

### FORT CROCKETT, TEX.

On May 3, 1900, the purchase of land at City Beach, near Galveston, Tex., was authorized, at a cost of $126,000, as provided for in the Army act of March 3, 1899, under the head of "Barracks and quarters." In April, 1900, steps were taken to begin the construction of a post on this site, to be known as Fort Crockett. In June the following buildings were placed under contract and work thereon commenced: One barrack for 100 men, 5 single officers' quarters, 4 single noncommissioned officers' quarters, a mess hall, a lavatory, an administration building, a stable and wagon shed, a bakery, a hospital, and a set of hospital steward's quarters. The contract prices, including plumbing and electric wiring, amount to $67,832.48.

### FORT DADE (EGMONT KEY), FLA.

At this post the following buildings chargeable to funds of the fiscal year 1898–99 were completed on August 22, 1899: Three single officers' quarters, a barrack for 65 men, a mess building, a single noncommissioned staff officers' quarters, a hospital, a set of hospital steward's quarters, and a storehouse.

From funds of fiscal year 1900 buildings were authorized as follows: One single officers' quarters, 1 barrack for 65 men, an adminstration building, a bakery, a shop building, a stable and wagon shed, an oil house, and an addition to storehouse, at a cost of $14,850. The barrack and officers' quarters were finished January 15, 1900, and the other buildings are nearly completed, furnishing accommodations for 130 enlisted men and 4 officers.

On July 19, 1899, $1,300 was alloted for the construction of 11 cisterns for this post.

### FORT DE SOTO (MULLET KEY), FLA.

In June, 1900, buildings for one battery at this post were contracted for, viz: A barrack for 100 men, a mess room and kitchen, 3 single officers' quarters, 1 double noncommissioned officers' quarters, a storehouse, a guardhouse, an administration building, a bakery, a stable, a shop building, a hospital, and a set of hospital steward's quarters. Cost, including plumbing and electric wiring, $69,453.68.

### FORT DU PONT (BATTERY POINT), DEL.

| | |
|---|---|
| At this post there are two temporary barracks for 60 men each, which were erected in the previous fiscal year, and temporary quarters for one officer, the latter being completed on January 5, 1900, at a cost of. | $2,368.00 |
| On April 14, 1900, authority was given for sinking an 8-inch artesian well at a cost of | 4,500.00 |
| Permanent buildings for two batteries were contracted for on May 31, 1900, as follows: Two barracks for 100 men each, 6 single officers' quarters, 2 double noncommissioned officers' quarters, an administration building, a stable and wagon shed, a guardhouse, a bakery, a hospital, and a set of hospital steward's quarters. Cost, including plumbing, electric wiring, and heating apparatus | 218,398.00 |
| Total | 225,266.00 |

### FORT FLAGLER (MARROWSTONE POINT), WASH.

The following buildings for one battery of artillery, contracted for on June 19, 1899, have been completed: A barrack for 80 men, 2 double officers' quarters, a set of noncommissioned officers' quarters, an administration building, a guardhouse, a quartermaster's and subsistence storehouse, a stable and wagon shed, a shop building, a bakery, a hospital, and a set of hospital steward's quarters.

| | |
|---|---|
| In October, 1899, there was expended for temporary shelter for troops... | $446.30 |
| On January 31, 1900, a road from wharf to engineer quarters was completed at a cost of | 800.00 |
| A sidewalk laid at a cost of | 710.00 |
| A sewer system completed at a cost of | 2,950.00 |
| On March 2, 1900, a double noncommissioned officers' quarters, a fuel shed, and a lavatory were contracted for at | 9,487.70 |
| On March 9 there was allotted for sinking a well | 3,500.00 |
| On April 12 a water system for flushing and fire purposes was placed under contract, amounting to | 5,997.00 |
| There has been allotted for clearing away underbrush as fire protection.. | 700.00 |
| Also for outbuildings, electric wiring, walks, lockers, and other improvements on new buildings | 4,259.50 |
| On May 31, 1900, contracts were executed for a barrack for 100 men and 4 single officers' quarters (to accommodate a second battery of artillery), including plumbing and electric wiring, at | 39,546.00 |
| Total | 67,850.20 |

### FORT FREMONT, S. C.

Funds were allotted in September and October, 1899, for the construction of the following buildings, etc., which were completed in May, 1900, at a cost of $23,653.54, viz: Three officers' quarters, a bar rack for 65 men, a set of hospital steward's quarters, a guardhouse, a commissary and quartermaster's storehouse, an addition to mess building, two single sets noncommissioned officers' quarters, alterations in hospital, and 10 cisterns. Including buildings previously constructed there are now accommodations at this post for 4 officers and 115 men, i. e., for a battery of present strength.

### POSTS NEAR GALVESTON, TEX.

The work of filling in the site of Fort San Jacinto (Fort Point) was continued during the year, the total expenditures authorized for the year being $14,640.05.

On December 16, 1899, a barrack for 120 men, and quarters for 3 officers, and other temporary buildings were completed at Camp Hawley, also a temporary barrack for 11 men, and other buildings at the Fort Point 10-inch gun battery. On December 30 the erection of additional temporary buildings at Camp Hawley, City Beach, and Bolivar Point (Fort Travis) was authorized.

| | |
|---|---|
| The cost of these temporary structures was | $14,062.47 |
| In April there was allotted for laying water pipe to kitchen near batteries at Fort Point | 1,475.00 |
| On June 12, 1900, a wharf was completed at Bolivar Point, at a cost of... | 3,322.59 |
| Total | 29,500.11 |

Permanent buildings for new post at City Beach are enumerated above under head of Fort Crockett.

(All buildings and other improvements at posts near Galveston were swept away by the storm of September 8, 1900.)

### FORT GREBLE, R. I.

The following permanent buildings, contracted for in June, 1899, were completed on July 2, 1900: A barrack for one battery of 80 men, 2 double officers' quarters, 1 double noncommissioned officers' quarters, a hospital, a set of hospital steward's quarters, a stable, and wagon shed and a guardhouse.

During the year the following work was authorized:

| | |
|---|---|
| Sinking wells, approximately | $6,000.00 |
| Conversion of temporary barracks into storehouse | 2,656.72 |
| Sewer, drains, and cistern (completed June 1, 1900) | 1,967.00 |
| Wall lockers in barrack | 1,494.00 |
| Construction of barrack for 100 men, 2 single officers' quarters, and 1 single noncommissioned officers' quarters (with plumbing, heating, and electric wiring), contracted for in June, 1900, at | 45,793.00 |
| Total | 57,910.72 |

### FORT HOWARD (NORTH POINT), MD.

| | |
|---|---|
| At this post there is a barrack for 20 men, and other temporary structures. An additional temporary storehouse was erected within the year at a cost of | $947.30 |
| The construction of a permanent post was begun in June, 1900, when buildings for a two-battery post were placed under contract, viz: 2 barracks for 100 men each, 6 single officers' quarters, 2 double noncommissioned officers' quarters, an administration building, a stable and wagon shed, a guardhouse, a bakery, a hospital, and a set of hospital steward's quarters. The contract prices, including plumbing, heating, and electric wiring, amount to | 157,979.00 |
| Additional work was commenced in June, as follows: | |
| Macadamizing road from wharf | 5,000.00 |
| Sinking an 8-inch artesian well | 3,600.00 |
| Total | 167,526.30 |

### FORT HUNT, VA.

A barracks for 80 men, 2 double officers' quarters, a hospital, a bakery, and a guardhouse, erected from funds of the preceding fiscal year, were completed on March 31, 1900.

The following allotments have been made for continuing work during the year:

| | |
|---|---|
| Sinking artesian well (completed in January, 1900) | $3,500.00 |
| Water and sewer systems, contracted for in May, 1900 | 16,080.85 |
| Construction of lavatory, contracted for on May 7 | 4,180.00 |
| Stationary lockers in new barracks, etc | 975.00 |
| Sheathing, painting, and remodeling barracks and other temporary buildings, for use as storehouses, post school, etc | 4,017.26 |
| Construction of 2 double noncommissioned officers' quarters, coal shed, administration building, quartermaster's stable, and oil house, with plumbing and electric wiring, contracted for June 11, 1900, amounting to | 17,637.00 |
| Total | 46,390.11 |

### FORT MONROE, VA.

To increase the capacity of barrack No. 5 from 6 batteries of 60 men each to 6 batteries of 113 men each and band, the work of constructing a third story on the building was placed under contract and commenced in June, 1900, the cost being as follows:

| | |
|---|---|
| Construction, proper | $37,207.36 |
| Heating apparatus | 3,976.36 |
| Total | 41,183.72 |

### FORT MORGAN, ALA.

At the beginning of the year there were permanent barracks for 60 men and quarters for 4 officers at this post.

| | |
|---|---|
| In October, 1899, there were authorized to complete shelter for battery, 2 temporary barracks for 60 men each, and a kitchen, which were completed in January at a cost of | $3.320.00 |
| On June 15, 1900, the following permanent buildings were placed under contract: A barrack for 120 men, a mess hall for enlisted men, 2 single officers' quarters, a double noncommissioned officers' quarters, a bakery, 2 additions to storehouse, 2 lavatories, an ordnance storehouse, and a coal shed. The cost of these buildings, including plumbing and wiring, will be | 50,382.13 |
| A water and a sewer system for the post are in course of construction at a cost of | 14,230.08 |
| For minor items of construction work, including oil house, boathouse, bath-house, walks, fences, drainage and plumbing in existing buildings, there has been allotted during the year | 2,458.44 |
| Total | 70,390.65 |

### FORT MOTT, N. J.

A double set of noncommissioned officers' quarters, contracted for in the previous fiscal year, was completed on September 30, 1899. The construction work done during the year included the sinking of an artesian well, the construction of temporary barracks, a temporary wagon shed, a bakery, a bath house, a dry earth closet, etc., at a cost of $8,655.19.

### FORT PICKENS, FLA.

| | |
|---|---|
| Work on this post was begun during the year, and a barrack for 60 men and 2 single officers' quarters were completed March 31, 1900, with plumbing, at a cost of | $12,412.00 |
| One double noncommissioned officers' quarters was completed on April 30, with plumbing, costing | 3,089.39 |
| In May and June a barrack for 80 men (or 120 if used only as dormitory), a guardhouse, an ordnance storehouse, and an oil house were contracted for, with plumbing and wiring, amounting to | 19,235.00 |
| On May 17 a water and sewer system were authorized, at estimated cost of | 11,163.00 |
| Total | 45,899.39 |

### FORT PREBLE, ME.

There are 3 barracks (one of them a temporary building) for 113 men, and 5 sets of quarters at this post.

| | |
|---|---|
| On June 4, 1900, permanent buildings for another battery, viz: A barrack for 100 men, a double officers' quarters, a guardhouse, and a hospital, with plumbing, heating, and electric wiring, were contracted for at | $75,751.00 |
| On June 14 a sewer system for the post was placed under contract at | 8,700.00 |
| Steam-heating apparatus has been placed in officers' quarters, a boathouse built, etc., at an additional cost of | 2,226.00 |
| Total | 86,677.00 |

### FORT RODMAN (CLARKS POINT), MASS.

Temporary barracks for 20 men, with plumbing and sewer and water connections, were built during the year at a cost of $4,996.13.

### FORT SAINT PHILIP, LA.

At the beginning of the year there were 2 sets of quarters and an old barrack at this post.

| | |
|---|---|
| In October, 1899, a barrack for 60 men, 2 single officers' quarters, and a guardhouse were contracted for, and have been completed at a cost of | $16,700.00 |
| An ordnance storehouse has been built, costing | 2,565.25 |
| Also a temporary hospital with plumbing, amounting to | 2,849.00 |
| And a temporary stable | 170.00 |
| Total | 22,284.25 |

### FORT SCREVEN, GA.

There are permanent quarters for 4 officers and a permanent barrack for 65 men at this post.

| | |
|---|---|
| An additional temporary barrack for 113 men was authorized in October and completed in November, 1899, at a cost of | $1,500.00 |
| Permanent buildings for another battery were placed under contract and work on same commenced in June, 1900, viz: A barrack for 100 men, a lavatory, 2 detached mess halls and kitchens, 2 single officers' quarters and a double set of noncommissioned officers' quarters, at a cost, including plumbing and wiring, of | 35,992.07 |
| A water system was completed on March 16, 1900, the contract price being | 11,970.00 |
| Allotments were made during the year for miscellaneous improvements on grounds and buildings amounting to | 5,686.48 |
| Total | 55,148.55 |

### FORT STEVENS, OREG.

Two barracks for 80 men each, 3 double officers' quarters, an administration building, a quartermaster's stable, a guardhouse, a double noncommissioned officers' quarters, a bakery, and a workshop at this post were placed under contract on June 17, 1899. These buildings are nearly completed. A quartermaster's and subsistence storehouse, contracted for on the same date was completed on May 1, 1900.

For continuing work at this post, funds were allotted during the year as follows:

| | |
|---|---|
| Sinking a 6-inch well | $4,000.00 |
| Spur railroad track and waiting room | 3,133.00 |
| Grading post site | 4,518.07 |
| Sewer system | 3,636.00 |
| Miscellaneous items | 1,008.80 |
| | 16,295.07 |

### FORT STRONG (LONG ISLAND HEAD), MASS.

Permanent construction at this post was not begun during the year, the title to land required for post site not having been obtained until June 27, 1900. The following expenditures, however, were authorized:

| | |
|---|---|
| Extension of wharf with automatic drop and storage building on same | $4,200.00 |
| Temporary buildings for 2 officers and 113 men (completed) | 3.200.00 |
| Water connection for same | 60.00 |
| | 7,460.00 |

### FORT SUMTER, S. C.

A frame barrack for 50 men at this post was completed March 9, 1900, the cost being $3,805.

### FORT TOTTEN, N. Y.

To shelter a battery of artillery at this post, a barrack for 120 men, including plumbing, heating, and gas piping, was contracted for in January, 1900, amounting to $34,258.

### FORT WASHINGTON, MD.

This post has accommodations for 3 officers and 133 men (including temporary barracks for 53 men).

| | |
|---|---|
| To provide permanent shelter for 2 additional batteries, 2 barracks for 100 men each and 6 single officers' quarters were contracted for on June 14, 1900, amounting to | $84,506.26 |
| (The cost of plumbing, heating, and electric wiring will be defrayed from funds of the fiscal year 1901.) | |
| The construction of a wharf was completed on February 1, 1900, with storage shed on same, at a cost of | 6,360.00 |
| For continuing work on well, there has been allotted | 4,773.49 |
| And for addition to bakery | 450.00 |
| Total | 96,089.75 |

### FORT WILLIAMS (PORTLAND HEAD), ME.

A double set of officers' quarters and an oil house, erected from funds of the preceding fiscal year, were completed February 22, 1900. There are also temporary barracks for 200 men, and a temporary set of officers' quarters at the post.

To provide permanent shelter for one battery, additional buildings were placed under contract in June, 1900, viz:

| | |
|---|---|
| 1 barrack for 100 men, 1 double officers' quarters, 1 double noncommissioned officers' quarters, and a hospital. Cost, including plumbing and heating, amounts to | $76,711.00 |
| Additional expenditures have been made as follows: | |
| Construction of bakery and coal shed (completed) | 2,312.63 |
| Grading | 5,500.00 |
| Wagon shed and shed over scales | 565.71 |
| Total | 85,089.34 |

## CONSTRUCTION OF INTERIOR POSTS.

Under this head the principal building operations of the year have been carried on at Forts Meade and D. A. Russell, where the work of enlargement and reconstruction has been continued; at the new post of Fort Lincoln, N. Dak., and at Jefferson Barracks and Fort Leavenworth, where extensive improvements have been commenced.

### FORT MEADE, S. DAK.

Under the special appropriation of July 1, 1898 ($30,000), the construction of barracks for one company was authorized May 11, 1899, and contracted for August 11, 1899, the contract prices being stated in the last annual report of this division. These barracks are practically completed. A bakery was also contracted for on May 10, 1900, at a cost of $4,849.

### FORT D. A. RUSSELL, WYO.

The bachelor officers' quarters and two double officers' quarters, for which funds were allotted on May 23, 1899, from the special appropriation of July 1, 1898 ($30,000), were placed under contract on July 24, 1899, and the work is nearly completed. A forage house is also under construction at this post, at a cost of $4,886.

### FORT LINCOLN, BISMARCK, N. DAK.

A double set of officers' quarters and a barrack for 100 men were completed on April 30, 1900, and placed in charge of a custodian. The cost of these buildings was set forth in the last annual report; the cost of construction proper being defrayed from the special appropriation of July 1, 1898 ($40,000), and the plumbing, heating, and gas piping from the appropriations for army transportation and regular supplies of the fiscal year 1900. No further allotments were made during the year.

### JEFFERSON BARRACKS, MO.

The following work was placed under contract and begun in June, 1900, the cost of construction, plumbing, and electric wiring of buildings being charged to the appropriation for barracks and quarters, the cost of heating apparatus to regular supplies, and the cost of grading, removing old buildings, and work on water and sewer systems, roads, etc., to the appropriation for army transportation, these amounts being included in the foregoing statements of expenditures from these appropriations:

| | |
|---|---|
| Grading | $10,080.00 |
| Wrecking old buildings | 4,950.00 |
| New roads, driveways, changes and extension of sewer system, and new granitoid walks | 41,736.30 |
| Sinking an artesian well | 1,200.00 |
| New administration building | 18,689.00 |
| Addition to storehouse | 12,735.00 |
| Oil house | 395.00 |
| Total | 89,785.30 |

### FORT LEAVENWORTH, KANS.

As stated under the head of "Military posts appropriation," Congress appropriated $50,000 for the erection of barracks, quarters, gun sheds, and stables for one battery of light artillery at this post. Congress also set aside $60,000 from the hospital appropriation for the construction of a hospital at this place. A board of officers was appointed to investigate the subject of additional construction at the post, and to carry out a portion of the recommendations of the board, the Secretary of War on April 4, 1900, allotted $200,000 from the Regular Army appropriations of the fiscal year 1900 ("Barracks and quarters" for the construction, plumbing, and electric wiring, and "Regular supplies" for heating apparatus), in addition to the $110,000 appropriated by Congress, making a total of $310,000 available for the reconstruction and enlargement of the post. Steps were at once taken to begin work, and on June 11, 1900, the following buildings were placed under contract and work commenced, the total expenditure involved being $303,469.77, and the amounts chargeable to each of the four appropriations being shown in detail in the foregoing tables:

1 hospital (48 beds).
8 double officers' quarters (16 sets) and bachelor officers' quarters (24 sets).
1 artillery barrack for 120 men.
1 light artillery stable for 134 horses.
2 cavalry stables for 110 horses each.
1 light battery gun shed.

### GENERAL HOSPITALS.

After the close of the fiscal year, the buildings and appurtenances of the hospital at Savannah, Ga., were sold at public auction for the sum of $17,100, and the lease of hospital site terminated. Steps are also being taken to dispose of the buildings of the Josiah Simpson Hospital, near Fort Monroe, Va.

General Order No. 6, Adjutant-General's Office, 1900, directed the discontinuance of Fort Bayard, N. Mex., as a garrison post, and the establishment there of a sanitarium for officers and enlisted men suffering from tuberculosis.

| | |
|---|---|
| There has been allotted to repair the buildings for this purpose (barracks and quarters) | $18,025.00 |
| Water supply and sewer improvements (army transportation) | 6,197.66 |
| Total | 24,222.66 |

To complete the general hospital at the Presidio of San Francisco, a guardhouse, a dining hall and kitchen for officers, a boiler and power building with heating and lighting plant, a filtration plant, and a refrigerating plant were erected and numerous improvements made on grounds and buildings. The total expenditure during the year was, approximately, $69,000.

### CAMPS, TEMPORARY CORRALS, ETC.

The following table shows expenditures reported from barracks and quarters and army transportation funds of the fiscal year 1899-1900, for flooring tents, constructing mess kitchens, latrines, etc., for troops in camp; expenditures for temporary corrals, and for structural water supply and sewerage, clearing, grading, roads, etc., in connection with camps and corrals:

| Location. | Barracks and quarters. | Army transportation. |
|---|---|---|
| Presidio of San Francisco, Cal.: | | |
| Model camp | $21,942.91 | $29,331.54 |
| Corrals | ............ | 24,121.75 |
| Camps for casuals, etc | 16,179.02 | 50,133.86 |
| Angel Island, Cal. (detention camp) | 14,885.79 | 9,040.06 |
| Fort Niagara, N. Y | 1,500.00 | 1,500.00 |
| Fort McPherson, Ga | 36.00 | 1,419.00 |
| Fort Ethan Allen, Vt | 1,186.11 | 1,443.58 |
| Camp Meade, Pa | 191.11 | 2,160.24 |
| South Framingham, Mass | 1,533.99 | 553.71 |
| Plattsburg Barracks, N. Y | 450.00 | ............ |
| Wardner, Idaho (Camp Wm. H. Osborne) | 2,227.30 | 33.50 |
| Wallace, Idaho | 100.00 | ............ |
| Seattle, Wash. (camps and corrals) | ............ | 7,574.65 |
| Tacoma, Wash. (corral) | ............ | 195.51 |
| Fort Logan, Colo | 1,710.12 | 1,915.00 |
| Vancouver Barracks, Wash | 4,815.06 | 7,969.99 |
| Chickamaugua Park, Ga. (depot) | 41.00 | 170.25 |
| Sequoia and General Grant National Parks, Cal | 97.24 | ............ |
| Camp near Wawona, Cal | 74.77 | ............ |
| Fort Leavenworth, Kans | 4,860.00 | 775.00 |
| Fort Riley, Kans | 2,029.88 | 722.25 |
| Fort Snelling, Minn | 994.75 | 5,988.90 |
| Fort Sam Houston, Tex | 2,630.82 | 1,319.20 |
| Fort Thomas, Ky | 1,445.00 | 2,193.00 |
| Fort Crook, Nebr | 1,326.46 | 1,901.35 |
| Jefferson Barracks, Mo | 6,403.20 | 650.60 |
| Fort Sheridan, Ill | 1,541.60 | 1,122.75 |
| Total | 88,201.63 | 152,235.64 |

There was also expended at South Framingham, Mass., after camp was vacated by United States troops, from the appropriation for incidental expenses, $859.36, for restoring the State grounds to former condition, and at Fort Sheridan, Ill., $118.75, regular supplies funds, for removing dead trees from grounds, making the total expenditure for preparing and restoring camp grounds, approximately, $241,415.38.

At the beginning of the fiscal year troops were in camp only at Middletown, Pa. (Camp Meade), and at the Presidio of San Francisco, Cal. Orders having been issued for organizing 10 regiments of infantry volunteers—the Twenty-sixth at Plattsburg Barracks, the Twenty-seventh and Twenty-eighth at Camp Meade, the Twenty-ninth at Fort McPherson, the Thirtieth at Fort Sheridan, the Thirty-first at Fort Thomas, the Thirty-second at Fort Leavenworth, the Thirty-third at Fort Sam Houston, the Thirty-fourth at Fort Logan, and the Thirty-fifth at Vancouver Barracks—on July 8, 1899, steps were taken to ascertain what facilities were available at these posts for quartering and messing the troops, water supply, water conveniences, etc. At some of the posts vacant barrack buildings were utilized, but in most cases the troops were sheltered in tents, and the necessary expenditures were authorized for tent floors and to provide such other camping facilities as were required. The same course was pursued when orders were issued in August for the organization of 12 additional regiments of infantry volunteers—the Thirty-eighth and Forty-ninth at Jefferson Barracks, the Thirty-ninth at Fort Crook, the Fortieth at Fort Riley, the Forty-first and Forty-seventh at Camp Meade, the Forty-second at Fort Niagara, the Forty-third at Fort Ethan Allen, the Forty-fourth at Fort Leavenworth, the Forty-fifth at Fort Snelling, the Forty-sixth at South Framingham, Mass., and the Forty-eighth at Fort Thomas, Ky. The total expenditures reported for camp improvements at these places are shown in the foregoing statement. The organization of these 22 regiments was completed and their camps vacated by November, 1899.

In December, 1899, the land leased at Camp Meade, Pa., was relinquished and the temporary buildings, tent floors, etc., were advertised and sold to the highest bidders. The camp at Wardner, Idaho, was abandoned about June 1, 1900.

In July, 1899, a camp for the Third Cavalry was established at Woodland Park, near Seattle, Wash. In August orders were given for dismantling this camp. Between October and December, 1899, mule sheds and water system were constructed for a corral at Seattle. On June 20, 1900, funds were allotted for clearing ground at Magnolia Bluff and preparation of camp in connection with shipment of animals from Seattle to Manila.

The principal expenditures for camping troops during the fiscal year 1899–1900 were made at San Francisco, as shown by the above statement. The total cost of preparing these camps and keeping them in repair to June 30, 1900, not including stoves, ranges, or other movable supplies, has been reported as follows:

MODEL CAMP AT THE PRESIDIO.

| | |
|---|---|
| From barracks and quarters funds, fiscal year 1899 | $14,454.97 |
| Barracks and quarters, 1900 | 21,942.91 |
| Army transportation, 1899 | 5,694.34 |
| Army transportation, 1900 | 29,331.54 |
| Total | 71,423.76 |

### CASUAL CAMPS AT THE PRESIDIO.

| | |
|---|---|
| From barracks and quarters funds, fiscal year 1899 | $3,426.73 |
| Barracks and quarters, 1900 | 16,179.02 |
| Army transportation, 1899 | 14,545.75 |
| Army transportation, 1900 | 50,133.86 |
| Total | 84,285.36 |

### DETENTION CAMP AT ANGEL ISLAND.

| | |
|---|---|
| From barracks and quarters funds, fiscal year 1900 | $14,885.79 |
| Army transportation, 1900 | 9,040.06 |
| Total | 23,925.85 |

There was also remitted, from army-transportation funds of the fiscal year 1900, for construction of corrals at the Presidio, with roads leading thereto, for horses en route to Manila, $24,121.75.

The department chief quartermaster gives the following account of the model and detention camps:

> The model camp was first occupied by troops on July 12, 1899, and vacated December 6, 1899, as a camp for incoming and outgoing troops, but has since been partially occupied by casual troops at the post under the supervision and control of the post authorities. Actual date of final completion of camp was September 11, 1899. The detention camp was completed and first occupied September 18, 1899, by the Thirty-first U. S. Volunteer Infantry, and vacated by that regiment on October 28, 1899; again occupied November 18, 1899, by the Forty-eighth U. S. Volunteer Infantry, and vacated December 20, 1899. A few suspected cases of contagious disease have been from time to time sent to this camp from incoming transports to await development of the malady, but no other regular occupation of the camp has been had. In the model camp the buildings are constructed of rough lumber, battened, with shingle roofs. The kitchens are provided with ranges and the dining rooms with stoves, rough tables, and benches. A wash trough extends the full length of kitchen in rear. The bath houses are provided with water heaters and boilers, and have four shower baths lined with zinc and furnished with hot and cold water. The latrines are constructed on the plans given in General Orders, No. 170, Adjutant General's Office, 1899, and have water connections. The different storehouses all have offices, which are provided with tables, chairs, etc. The subsistence storehouse has a cold room. The office of the mustering-out officer was divided into rooms and provided with telephone and telegraph. All the storehouses were heated by stoves. All kitchens, baths, latrines, etc., were connected with the water supply and all, except the latrines, connected with a sewer to the bay. The tents were floored with rough flooring, and all hospital and wall tents had rough frames. All tents were provided with stoves on brick hearths laid on top of the floors.
>
> In the detention camp the construction of the buildings was similar to that of the model camp, except that there were no bath houses. Earth closets and separate urinals were used in place of latrines. Three tanks, of 20,000 gallons capacity each, were erected and water supplied therefrom. An addition to the wharf was constructed to enable the steamer *General McDowell* to pump water to the tanks, and the old wharf was repaired and strengthened and a small storehouse erected thereon.

The following description of the "casual camps" is given by the quartermaster at the Presidio:

> The construction of the above camps was commenced in November, 1898, and completed in September, 1899. The construction, however, has not been continuous, additional camps being built only as the necessities of the service required. These camps have been occupied more or less since completion up to the present time. They have been built with a view to their permanency. The buildings, camp kitchens, etc., are of wood, with shingle roof and battened sides, and are solidly constructed. The latrines are equipped according to the system of closet troughs adopted by the War Department. All tent floors are elevated more or less above the surface of the ground, according to its formation, and each tent is equipped with a heating stove. The kitchens are equipped with cooking ranges, with hot and cold water, and each has a standpipe and slop hopper on the outside, properly sewered and trapped. On one side of each kitchen is a washroom, extend-

ing the entire length of the building, supplied with zinc-lined wooden troughs, with faucets for washing purposes, etc., all sewered and trapped. The kitchens are each 24 by 32 feet, being built large enough to afford messing facilities in rainy weather. Each regimental camp has three bath houses, each equipped with six showers, with hot and cold water. In fine, these camps, from a habitable and sanitary standpoint, including water and sewer systems, are as perfect as it is possible to make them. Their capacity is approximately 6,500 men.

Orders having been issued for the abandonment of the temporary depot and corral at Chickamauga Park, Ga., on July 12, 1900, instructions were given to retain certain storehouses and wagon sheds, to ship new lumber to Fort McPherson, and to take necessary steps to sell the remaining sheds and old lumber.

## CUBA, PORTO RICO, ALASKA, AND THE PHILIPPINES.

The cost of building material purchased in the United States and of labor and additional material employed in the construction of shelter for troops, structural water supply, etc., in the above-named military divisions and departments, chargeable to barracks and quarters and army-transportation funds of the fiscal year 1900, is shown in the following statement, so far as reported to this office:

| Division or department. | Barracks and quarters funds. | Army-transportation funds. | Total. |
|---|---|---|---|
| Division of Cuba | $1,151.78 | $9,926.44 | $11,078.22 |
| Department of Porto Rico | 203,197.92 | 30,839.99 | 234,037.91 |
| Department of Alaska | 293,357.74 | 60,307.20 | 353,664.94 |
| Division of the Philippines | 170,813.02 | 41,119.22 | 211,932.24 |
| Total | 668,520.46 | 142,192.85 | 810,713.31 |

## CUBA.

On July 11, 1899, by direction of the President, it was ordered that thereafter all expenditures necessary for construction, repair, or lease of buildings or wharves for public purposes in Cuba be paid for out of the revenues of the island upon the authorization and approval of the division commander. Under these instructions the cost of building material purchased in New York early in the fiscal year was defrayed from Cuban revenues, and all expenditures made in Cuba from barracks and quarters funds subsequent to July 1, 1899, for construction, repairs, and rents were reimbursed from Cuban revenues. The small expenditures included in the foregoing statement were authorized for the purchase of carpenters' tools, articles for water supply, odorless excavators, etc., in the United States for shipment to Cuba, and to pay accounts for sinking wells.

On August 10, 1899, the Secretary of War directed that the entire expense of the construction and equipment of the railway and wharf at Triscornia (Habana Bay) be reimbursed the United States from Cuban revenues. The total expenditures to September 30, 1899 (principally from funds of the fiscal year 1899), exclusive of claims for land for right of way, have been reported as follows:

| | |
|---|---|
| Railroad, including equipment, pier, and wharf | $264,617.47 |
| Warehouses | 41,870.30 |
| Operating, additional grading, ballasting, etc | 36,124.07 |
| Total | 342,611.84 |

This amount was reimbursed on January 4, 1900.

Incomplete statements have been received of the expenditures made during the year from insular funds. The total expenditures reported are as follows:

| | |
|---|---|
| Rents | $123,004.12 |
| Construction of buildings | 385,789.31 |
| Repairs to buildings | 69,743.40 |
| Structural heating, lighting, water supply, and sewerage | 69,460.17 |
| Roads, walks, grading, drainage, and wharves | 20,098.15 |
| Total | 668,095.15 |

The chief quartermaster, Department of Santiago and Puerto Principe, reports as follows regarding the posts in that department:

During the latter part of the preceding fiscal year (1899) the old Spanish barracks and other public buildings at the various places throughout the department where troops were stationed were renovated and disinfected and placed in condition for occupancy by troops as barracks, or to be used as storehouses. At such places as there were no barracks or public buildings suitable buildings were rented.

On July 1, 1899, all troops in this department were quartered in old Spanish barracks or other public buildings. Officers were quartered generally in rented buildings, though public buildings were used for this purpose at a few of the stations.

Hospitals were old Spanish hospitals or barracks.

Storehouses were rented, except at a few small stations where public buildings were available.

The offices were usually located in the Spanish buildings, though in some cases they were rented.

The animals generally were without shelter, except such places as canvas shelter had been improvised.

So far as the records of this office show, the barracks were large, roomy, and made excellent and satisfactory quarters.

The chief quartermaster, Department of Matanzas and Santa Clara, makes the following remarks:

The post of Hamilton Barracks, of which the construction was well advanced at the close of the fiscal year ending June 30, 1899, was completed during the early part of the past fiscal year, according to the original plans, from funds of the Quartermaster's Department. A number of extra buildings, which were found to be required, not provided for by the original plans, were also constructed and paid for from island funds.

The post of Rowell Barracks, at the mouth of the harbor of Cienfuegos, was also completed under the direction of First Lieut. J. L. Hines, Second Infantry, partly from quartermaster's funds and partly from island funds.

## PORTO RICO.

Funds were allotted in the past year from the barracks and quarters appropriation for the construction of a subsistence storehouse, three sets of officers' quarters, a guardhouse and a lavatory at San Juan, and a bath house at Ponce; also for reconstruction and repair of buildings damaged by the storm of August, 1899:

| | |
|---|---|
| Building material, tools, mill machinery, plumbing supplies, etc., were purchased at New York depot, amounting approximately to | $66,656.92 |
| There was expended in Porto Rico for hire of labor and additional material for construction and repairs, approximately | 136,541.00 |
| Total barracks and quarters funds | 203,197.92 |

The statements received do not show the actual cost of the above-named buildings or whether any additional buildings have been erected.

| | |
|---|---|
| From the appropriation for army transportation, plumbing materials, sanitary appliances, etc., have been purchased in New York, aggregating | $17,211.65 |
| The department chief quartermaster also reports expenditures from this appropriation for plumbing, structural water supply and sewerage, and work on roads, wharves, etc., amounting to | 13,628.34 |
| Total | 30,839.99 |

## ALASKA.

New posts, designated as Fort Egbert and Fort Gibbon, were partially constructed during the past year at Eagle City and Tanana, respectively. The construction of new posts at Fort St. Michael, Cape Nome, and Port Valdez was commenced in the spring of 1900, lumber for this purpose being purchased at Seattle and corrugated iron, hardware, etc., in Chicago, and shipped to Alaska. The allotments made for material and labor for these posts are set forth below. The actual cost of this lumber has not been reported.

*Fort Egbert.*—The following buildings for a company of infantry are reported as completed: A barrack, 3 officers' quarters, a hospital, a bakery, 5 storehouses, an administration building, a sawmill, a guardhouse, an ice house, and a barn. An additional storehouse, a stable, employees' quarters, and 3 noncommissioned officers' quarters were in course of construction at the close of the year.

| | |
|---|---|
| Expenditures on buildings for the year were, approximately | $65,621.95 |
| Plumbing supplies, pumps, etc., from army transportation funds were also furnished, costing | 4,051.20 |
| Total | 69,673.15 |

*Fort Gibbon.*—On July 25, 1900, buildings were completed as follows: One barrack, 4 officers' quarters, a hospital, 3 storehouses, a sawmill, a building for pilot, scout, etc., a bath house, and an ice house. An additional barrack, 4 officers' quarters, an administration building, a bakery, and a guardhouse were under construction, to accommodate in all about 2 companies of infantry. Approximate cost from funds of fiscal year 1900, $63,545.30.

*Fort Liscum* (*Valdez*).—For the construction of 2 single and 1 double officers' quarters, 1 noncommissioned officers' quarters, a barrack building for 100 men, an adjutant's office, a guardhouse, an amusement room, a bath house, a hospital, 3 storehouses, a stable, a forage house and corral, a bakehouse, a shop building, an oil house, and privies, there was allotted—

| | |
|---|---|
| To cover cost of material | $30,000.00 |
| Material for board walk (from army transportation funds) | 500.00 |
| For hire of labor, May 21 | 6,000.00 |
| For engine for hoisting on wharf (army transportation) | 2,000.00 |
| Total | 38,500.00 |

*Fort Davis* (*Cape Nome*).—For the construction of 1 single and 3 double officers' quarters, 2 barracks for 100 men each, and other buildings enumerated under head of Valdez, there was allotted—

| | |
|---|---|
| To cover cost of material | $50,000.00 |
| For material for board walk | 500.00 |
| For hire of labor | 7,200.00 |
| Total | 57,700.00 |

*Fort St. Michael.*—At this post the construction of 1 single and 3 double officers' quarters, 2 barracks for 100 men each, and additional buildings corresponding to those enumerated under head of Valdez has been authorized; also an administration building, quarters for clerks, and quarters for other civilian employees in connection with department headquarters. Funds have been allotted as follows:

| | |
|---|---|
| Material for buildings | $50,000.00 |
| Material for board walk and wharf | 1,000.00 |
| Hire of labor | 10,000.00 |
| Material for medical storehouse | 1,463.00 |
| Total | 62,463.00 |

### GENERAL ALLOTMENTS FOR ALASKA.

The following additional expenditures have been authorized for buildings, roads, water supply, etc., for Alaska in general:

| | |
|---|---|
| Continuing the construction of transcontinental road from Port Valdez to Eagle City | $49,975.00 |
| 2 distilling plants (incidental expenses appropriation) | 4,730.00 |
| Mechanics' tools, lime, feed boxes, etc | 2,172.49 |
| Tram cars and track for landing quartermaster stores and building material | 2,030.00 |
| Remitted to department chief quartermaster for general construction work | 7,355.00 |
| Condensing plants and fire extinguishers (incidental expenses) | 3,125.00 |
| Plows, scrapers, etc | 251.00 |
| Total | 69,638.49 |

### PHILIPPINE ISLANDS.

Materials, tools, etc., for construction of buildings, roads, water and sewer systems, and refrigerating plant have been purchased during the year at Seattle, San Francisco, and New York and shipped to Manila, from different appropriations and from the Philippine revenues, as summarized below:

| | |
|---|---|
| From barracks and quarters funds, for 5,260,689 feet of lumber, with iron roofing and hardware; also for tools, cement, wood-working machinery, filters, etc | $170,350.38 |
| From army transportation funds, for sterilizing apparatus, filters, condensing plant, and articles to construct water and sewer systems | 41,119.22 |
| From incidental expenses appropriation, for 200 sterilizers and for condensing plants | 44,304.75 |
| From revenues of the islands, for construction of refrigerating plant at Manila (including labor), and for material for 18½ miles of railroad, water pipe and fittings, and 4 Smith crematories | 255,186.47 |
| Total | 510,960.82 |

The sum of $50,000, barracks and quarters funds, was remitted to Manila, but from reports rendered it appears that the only expenditures made from this remittance were as follows:

| | |
|---|---|
| Repairs to nipa buildings at Pasay cavalry barracks | $288.67 |
| Rent of office for depot quartermaster at Nagasaki, Japan | 173.97 |
| Total | 462.64 |

The officer in charge of the construction of refrigerating plant at Manila reports expenditures for material and labor on account of this plant to June 30, 1900, from Philippine funds, aggregating $582,234.64 (Mexican currency), also $9,980.35 (gold) for outstanding debts for material purchased in the United States.

The chief quartermaster, Division of the Pacific, reports additional expenditures from Philippine funds as follows (Mexican currency):

| | |
|---|---|
| Construction and repair of buildings | $479,362.44 |
| Rents | 352,652.89 |
| Structural water supply, sewerage and plumbing | 72,533.20 |
| Heating and lighting | 308,373.60 |
| Railway construction | 269,129.31 |

The chief quartermaster, Department of Northern Luzon, reports under date of August 14, 1900, that $52,369, Mexican money (public civil funds, included in above figures), had been allotted in March, 1900, for construction and repairs to provide buildings necessary for troops during the rainy season, that the work provided for was about completed, and that the garrisons generally appeared to be in satisfactory condition.

The chief quartermaster, Department of Southern Luzon, reports as follows:

> In most instances upon entering a town our troops have found it practically vacated, and at once occupied such buildings as were needed. As soon as the natives gained confidence they would return and claim their houses. In all cases where suitable houses could be obtained and the troops are more or less permanently stationed, houses have been rented from the owners if they can prove that they have taken no active part in the insurrection.
>
> In some instances shelter for the troops and the animals have been constructed of a temporary nature.

Col. Charles Bird, quartermaster, U. S. A., of this office, who recently visited the Philippine Islands on an inspection trip, makes the following remarks relative to shelter for troops and stores:

> The troops outside of Manila and on the island of Luzon, where it is impossible for them to secure buildings or old Spanish barracks in the towns near which they are stationed, are living in conical walled tents. In visiting General Hall's brigade, found a number of his troops living in tents. The troops on the islands of Panay, Mindora, Jolo, Cebu, and other islands, are housed in old Spanish barracks and dilapidated churches which have been abandoned, and in rented buildings so far as they can be secured.
>
> All of the buildings constructed on the islands for quartering troops are paid for out of the public civil fund. This is also true of the offices in Manila and the buildings rented for troops, which are paid for out of the same fund. * * *
>
> At points throughout the islands occupied by our troops where public buildings, barracks, and hospitals are found, they are at once taken possession of and used by the Government for offices, housing the troops, and taking care of the sick.

He also reports that accommodations for three regiments have been constructed near Manila (at Corregidor Island, exposition grounds, and Pasay), the buildings being constructed of nipa and bamboo.

Colonel Bird further states that buildings owned by private parties have been rented for storage purposes, the rent being paid from public civil funds, and that public animals are stabled in open structures thatched with nipa or old condemned canvass when commands are stationed for any length of time in one place.

### TARGET FUNDS.

"For shelter, shooting galleries, ranges for small arms, target practice, repairs, and expenses incident thereto," Congress, in the act making appropriations for the support of the Army, approved May 26, 1900, appropriated $10,000.

The total amount authorized for rent, repairs, and construction in each department, etc., is shown in the annexed statement.

| Departments, etc. | Amount. | Departments, etc. | Amount. |
|---|---|---|---|
| Department of the East | $727.00 | Camp Meade, Pa | $2,517.48 |
| Department of the Missouri | 1,186,87 | Westpoint, N. Y | 123.75 |
| Department of the Colorado | 961.01 | Division of Cuba | 1,202.80 |
| Department of Dakota | 688.39 | Department of Porto Rico | 841.25 |
| Department of California | 65.73 | Balance | 1,177.21 |
| Department of the Columbia | 163.51 | | |
| Department of Texas | 345.00 | Total | 10,000.00 |

### INCIDENTAL EXPENSES APPROPRIATION.

Expenditures from this appropriation amounting to $120,045.21 were authorized in this division for miscellaneous purposes, including stationary and box lockers and flagstaffs.

*Box lockers.*—Five thousand box lockers were manufactured at a cost of $1.80 each, and placed in stock at Jeffersonville depot. At the close of the year there was a balance of 3,930 lockers available for issue at this depot.

At New York depot 10,023 lockers were purchased, principally for troops in Cuba and Porto Rico. Of these, 3,000 cost $1.64 each and the remaining 7,023, $2.20 each. The lockers were disposed of as follows:

| | |
|---|---|
| Shipped to Cuba | 7,361 |
| Shipped to Porto Rico | 1,300 |
| Shipped to other posts | 1,212 |
| In stock June 30, 1900 | 150 |
| Total | 10,023 |

In addition to the above, 1,570 lockers were purchased at various points at total cost of $3,117.37. In all 16,593 lockers were purchased during the year at an average cost of $1.96.

*Flagstaffs.*—One of the 100-foot iron staffs from stock at St. Louis depot was erected during the year at Columbus barracks, leaving three available for issue. Flagstaffs of various designs were also erected at Fort Hunt, Va.; Fort Wood, N. Y.; Forts Casey and Flagler, Wash.; Fort Jackson, La.; Fort Caswell, N. C.; Fort Dade, Fla.; Columbus Barracks, Ohio; Fort Mackenzie, Wyo.; Fort St. Philip, La.; Fort Terry, N. Y., and Fort Michie, N. Y.

### ROAD AT THE PRESIDIO, CAL. (SPECIAL APPROPRIATION).

In special act of Congress approved March 3, 1899, $5,000 was appropriated for road to national cemetery, Presidio of San Francisco, Cal.

Contract was entered into on December 20, 1899, for construction of a stone wall along the southern boundary of the Presidio Reservation at $5.50 per linear foot, 35 cents per cubic foot for additional concrete foundation, and 55 cents per cubic foot for additional stonework.

| | |
|---|---|
| Under this contract there was expended to June 30, 1900 | $1,810.00 |
| Expended for advertising and pay of inspector | 324.00 |
| Balance on hand | 2,866.00 |
| Total | 5,000.00 |

### LOSSES BY FIRE.

The following statement shows damage to buildings by fire in the past year:

| Post. | Buildings. | Amount of damage. |
|---|---|---|
| Fort Du Chesne, Utah | 1 cavalry and 1 quartermasters' stable | Destroyed. |
| | Cavalry barrack | Do. |
| Fort Snelling, Minn | Engineers' quarters (No. 3) | Do. |
| Fort Keogh, Mont | Hospital (No. 23) | Do. |
| | Bath house (No. 56) | Damaged $200. |
| Fort Brady, Mich | Barrack (No. 12) | Damaged $10,000. |
| Dyea, Alaska | Building (shelter for men and stores) | Destroyed. |
| Fort Huachuca | Hay shed | Destroyed with 400 tons of hay. |
| Fort Hamilton, N. Y | Hospital | Damaged $300. |
| Fort Preble, Me | Bakery (No. 13) | Damaged $600. |
| Presidio of San Francisco, Cal. | Building No. 17, containing 14 sets officers' quarters. | Destroyed. |
| Boise Barracks, Idaho | Blacksmith shop | Do. |
| | Hospital | Damaged $1,000. |
| Fort Meade, S. Dak | Cavalry stable (No. 39) | Destroyed. |
| Fort Omaha, Nebr | Double set officers' quarters (Nos. 1 and 2) | Do. |
| Fort Leavenworth, Kans | Old battery stable (No. 93) | Do. |
| | Old artillery gun shed (No. 94) | Do. |
| Whipple Barracks, Ariz | Double set officers' quarters (Nos. 7 and 8) | Do. |
| Fort Wingate, N. Mex | Commissary storehouse (No. 34) | Damaged $100. |
| | Sawmill | Destroyed. |
| | 2 cavalry stables (Nos. 68 and 69) | Do. |
| Fort Washakie, Wyo | School, library, and chapel building (No. 37) | Damaged $1,500. |
| Fort Clark, Tex | Officers' quarters (No. 20) | Damaged $700. |
| | Outbuilding | Damaged $100. |
| | Forage room in stable | Damaged. |
| Fort Bayard, N. Mex | Hospital laundry (No. 12) | Damaged $60. |

Very respectfully,

M. C. MARTIN,
*Major and Quartermaster, United States Volunteers.*

The QUARTERMASTER-GENERAL.

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APPENDIX A.—*Property hired by the Quartermaster's Department for the recruiting service and the amount of rent paid therefor.*

### DEPARTMENT OF THE EAST.

| Place where rented. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Richmond, Va | Cellar and 2 floors. | Recruiting station | $50.00 | $325.00 |
| Baltimore, Md | 9 rooms | do | 30.00 | 360.00 |
| Albany, N. Y | 6 rooms | do | 40.00 | 480.00 |
| Buffalo, N. Y | 5 rooms | do | 65.00 | 780.00 |
| Brooklyn, N. Y | 4 rooms | do | 40.00 | 240.00 |
| Binghamton, N. Y | | do | 45.00 | 150.83 |
| New York City: | | | | |
| Twenty-fifth street and Third avenue. | 5 rooms | do | 140.00 | 1,650.00 |
| 57 East One hundred and twenty-fifth street. | 8 rooms | do | 80.00 | 960.00 |
| 132 Park avenue | 1 room | do | 50.00 | 600.00 |
| Newark, N. J | 3 rooms | do | 40.00 | 480.00 |
| Jersey City, N. J | 3 rooms | do | 40.00 | 400.00 |
| Philadelphia, Pa | 18 rooms | do | 166.66 | 1,888.81 |
| Pittsburg, Pa | 10 rooms | do | 75.00 | 900.00 |
| Boston: | | | | |
| 35 Kneeland street. | 3 floors | do | 60.00 | 720.00 |
| 78 Hanover street. | 4 rooms | do | 92.50 | 1,110.00 |
| Fall River, Mass | 1 room | do | 27.00 | 297.00 |

**Appendix A.**—*Property hired by the Quartermaster's Department for the recruiting service and the amount of rent paid therefor*—Continued.

### DEPARTMENT OF THE EAST—Continued.

| Place where rented. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year |
|---|---|---|---|---|
| New Bedford, Mass | 2 rooms | Recruiting station | $30.00 | $324.00 |
| Springfield, Mass | 1 room | do | 20.00 | 220.00 |
| Worcester, Mass | 2 rooms | do | 30.00 | 344.00 |
| Bridgeport, Conn | 1 room | do | 20.00 | 220.00 |
| Hartford, Conn | 2 rooms | do | 30.00 | 210.00 |
| Do | 1 room | do | 19.00 | 76.00 |
| New Haven, Conn | 2 rooms | do | 45.00 | 405.00 |
| Waterbury, Conn | do | do | 45.00 | 252.00 |
| Portland, Me | 3 rooms | do | 16.00 | 176.00 |
| Providence, R. I | 2 rooms | do | 30.00 | 330.00 |
| Rochester, N. Y | 6 rooms | do | 65.00 | 437.67 |
| Paterson, N. J | 1 room | do | 35.00 | 175.00 |
| Brooklyn, N. Y | 1 floor | do | 15.00 | 60.00 |
| Rochester, N. Y | 6 rooms | do | 65.00 | 325.00 |
| Greensboro, N. C | 2 rooms | do | 22.00 | 101.92 |
| Raleigh, N. C | do | do | 23.00 | 115.00 |
| Savannah, Ga | do | do | 40.00 | 160.00 |
| Macon, Ga | 3 rooms | do | 25.00 | 125.00 |
| Atlanta, Ga | 2 rooms | do | 12.50 | 95.15 |
| Birmingham, Ala | 3 rooms | do | 30.00 | 120.00 |
| Mobile, Ala | 2 rooms | do | 16.25 | 65.00 |
| New Orleans, La | 1 room | do | 50.00 | 200.00 |
| Various points |  | Temporary stations and lodgings |  | 15,950.35 |
| Total |  |  |  | 31,728.73 |

### DEPARTMENT OF THE LAKES.

| Place where rented. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year |
|---|---|---|---|---|
| Chicago, Ill | Building | Recruiting station | $82.00 | $984.00 |
| Do | do | do | 60.00 | 240.00 |
| Peoria, Ill | do | do | 22.00 | 176.00 |
| Springfield, Ill | do | do | 23.50 | 208.37 |
| Louisville, Ky | do | do | 65.00 | 780.00 |
| Lexington, Ky | 3 rooms | do | 25.00 | 75.00 |
| Do | do | do | 20.00 | 100.00 |
| Columbus, Ohio | 1 room | do | 50.00 | 150.00 |
| Do | do | do | 56.67 | 396.69 |
| Chillicothe, Ohio | 2 rooms | do | 25.00 | 88.33 |
| Canton, Ohio | do | do | 35.00 | 249.67 |
| Cleveland, Ohio | Building | do | 93.00 | 1,023.00 |
| Dayton, Ohio | do | do | 40.00 | 320.00 |
| Do | 3 rooms | do | 30.00 | 150.00 |
| Cincinnati, Ohio | Building | do | 72.00 | 864.00 |
| Lima, Ohio | 2 rooms | do | 27.50 | 82.50 |
| Toledo, Ohio | 3 rooms | do | 50.00 | 363.33 |
| Zanesville, Ohio | 2 rooms | do | 35.00 | 210.00 |
| Youngstown, Ohio | 1 room | do | 30.00 | 140.00 |
| Terre Haute, Ind | 2 rooms | do | 15.00 | 64.50 |
| Evansville, Ind | Building | do | 50.41 | 604.92 |
| Indianapolis, Ind | do | do | 50.00 | 600.00 |
| Grand Rapids, Mich | 2 rooms | do | 60.00 | 206.00 |
| Do | Building | do | 50.00 | 350.00 |
| Detroit, Mich | do | do | 75.00 | 900.00 |
| Milwaukee, Wis | do | do | 56.00 | 672.00 |
| Memphis, Tenn | do | do | 30.00 | 120.00 |
| Do | 3 rooms | do | 25.00 | 275.00 |
| Nashville, Tenn | Building | do | 50.00 | 600.00 |
| Knoxville, Tenn | do | do | 30.00 | 90.00 |
| Do | do | do | 25.00 | 150.00 |
| Chattanooga, Tenn | do | do | 25.00 | 300.00 |
| Various points |  | Temporary stations and lodgings |  | 7,444.75 |
| Total |  |  |  | 18,978.06 |

### DEPARTMENT OF TEXAS.

| Place where rented. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year |
|---|---|---|---|---|
| Dallas, Tex | 3 rooms | Recruiting station | $34.00 | $408.00 |
| Fort Worth, Tex | 1 room | do | 22.50 | 203.25 |
| Various points |  | Temporary stations and lodgings |  | 1,047.25 |
| Total |  |  |  | 1,658.50 |

APPENDIX A.—*Property hired by the Quartermaster's Department for the recruiting service and the amount of rent paid therefor*—Continued.

### DEPARTMENT OF THE MISSOURI.

| Place where rented. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Topeka, Kans | 2 rooms | Recruiting station | $24.00 | $288.00 |
| Kansas City, Kans | 8 rooms | do | 60.00 | 720.00 |
| St. Joseph, Mo | 2 rooms | do | 25.00 | 142.00 |
| Little Rock, Ark | do | do | 35.00 | 140.00 |
| Des Moines, Iowa | 5 rooms | do | 50.00 | 600.00 |
| Various points |  | Temporary stations and lodgings |  | 3,644.81 |
| Total |  |  |  | 5,534.81 |

### DEPARTMENT OF DAKOTA.

| Place where rented. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| St. Paul, Minn | 7 rooms | Recruiting station | $51.50 | $523.00 |
| Minneapolis, Minn | 10 rooms | do | 50.66 | 557.26 |
| Fargo, N. Dak | 5 rooms | do | 30.00 | 150.00 |
| Butte, Mont | 4 rooms | do | 35.00 | 114.34 |
| Various points |  | Temporary stations and lodgings |  | 380.35 |
| Total |  |  |  | 1,724.95 |

### DEPARTMENT OF THE COLORADO.

| Place where rented. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Cheyenne, Wyo | 1 room | Recruiting station | $12.00 | $57.20 |
| Do | 2 rooms | do | 25.00 | 60.00 |
| Denver, Colo | do | do | 24.00 | 144.00 |
| Do | 3 rooms | do | 45.00 | 270.00 |
| Various points |  | Temporary stations and lodgings |  | 3,138.94 |
| Total |  |  |  | 3,670.14 |

### DEPARTMENT OF CALIFORNIA.

| Place where rented. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| San Francisco, Cal | 7 rooms | Recruiting station | $75.00 | $825.00 |
| Various points |  | Temporary stations and lodgings |  | 1,694.13 |
| Total |  |  |  | 2,519.13 |

### DEPARTMENT OF THE COLUMBIA.

| Place where rented. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Seattle, Wash | 3 rooms | Recruiting station | $35.00 | $206.55 |
| Portland, Oreg | 5 rooms | do | 43.00 | 516.00 |
| Various points |  | Temporary stations and lodgings |  | 971.08 |
| Total |  |  |  | 1,693.63 |

### RECAPITULATION.

|  |  |
|---|---|
| Department of the East | $31,728.73 |
| Department of the Lakes | 18,978.06 |
| Department of Texas | 1,658.50 |
| Department of the Missouri | 5,534.81 |
| Department of Dakota | 1,724.95 |
| Department of the Colorado | 3,670.14 |
| Department of California | 2,519.13 |
| Department of the Columbia | 1,693.63 |
| Department of Porto Rico | 11.20 |
| Total | 67,519.15 |

**Appendix B.**—*Property rented by the Quartermaster's Department for use as offices, storehouses, barracks, quarters, etc., during the fiscal year, and the amount of rent paid therefor.*

## DEPARTMENT OF THE EAST.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Fort Banks, Mass | 12-room house | Hospital | $50.00 | $250.00 |
| Boston, Mass | 10 rooms and loft. | Offices, etc., for quartermaster and commissary. | 458.33 | 5,499.96 |
|  | 2 rooms | Office for paymaster | 75.00 | 135.00 |
|  | 1 room | Commissary-sergeant's quarters | 12.00 | 22.80 |
| Southport, N. C | 4-room house each. | Quarters for ordnance sergeant, electrician sergeant, and post quartermaster-sergeant. | 8.00 | 99.50 |
|  | 4-room house | Headquarters of hospital steward | 7.00 | 6.40 |
|  | 2-room house | Quarters for post quartermaster-sergeant. | 4.50 | 4.50 |
| New Castle, N. H | 3-room house | Commissary-sergeant's quarters | 10.00 | 4.33 |
| Tampa, Fla | 1-room house | Office of quartermaster's agent | 5.75 | 34.50 |
| Fort Du Pont, Del | 3-room house | Quarters for major | 30.00 | 360.00 |
|  | 2-room house | Quarters for acting assistant surgeon | 20.00 | 240.00 |
|  | .....do | Quarters for first lieutenant | 20.00 | 54.67 |
|  | .....do | Quarters for second lieutenant | 20.00 | 50.66 |
|  | 1-room house | Quarters for post quartermaster-sergeant. | 10.00 | 110.00 |
|  | .....do | Quarters for commissary-sergeant | 10.00 | 120.00 |
|  | .....do | Quarters for electrician sergeant | 10.00 | 20.00 |
| Fort Ethan Allen, Vt | 4-room house | Quarters for commissary-sergeant | 10.00 | 13.00 |
| Fort Hamilton, N. Y | 1-room house | Quarters for post quartermaster-sergeant. | 12.00 | 132.00 |
| Fort Hunt, Va | .....do | Quarters for commissary-sergeant | 7.00 | 49.00 |
| Fort McPherson, Ga | 2-room house | Office paymaster | 40.00 | 312.00 |
|  |  | Lodging for guard detained en route | .......... | 2.00 |
| Fort Mott, N. J | 1-room house. | Quarters for post quartermaster-sergeant. | 10.00 | 27.67 |
|  | 2-room house. | Quarters for acting assistant surgeon | 24.00 | 160.00 |
| Fort Myer, Va | Land | For troop H Third Cavalry, going to target practice. | .......... | 10.00 |
| Plattsburg Barracks, N. Y. | 40 acres | Camp for Twenty-sixth U. S. Volunteer Infantry. | 25.00 | 25.00 |
| St. Francis Barracks, Fla. | House, 4 rooms and kitchen. | Quarters of commissary-sergeant | 12.00 | 132.00 |
| Sullivans Island, S. C | 8-room house | Administration building | 36.00 | 432.00 |
|  | 10-room house | Quartermaster's office, etc | 36.00 | 432.00 |
|  | 5-room house. | Quarters for 2 colonels | 60.00 | 300.00 |
|  | 4-room house. | Quarters for lieutenant-colonel | 48.00 | 363.20 |
|  | 8-room house. | Quarters for 6 captains | 36.00 | 1,171.20 |
|  | 2-room house. | Quarters for 7 lieutenants | 24.00 | 865.60 |
|  | .....do | Quarters for noncommissioned staff officers. | 16.00 | 75.73 |
|  | 1-room house. | Quarters for 4 noncommissioned staff officers. | 12.00 | 270.00 |
|  | .....do | Quarters for 2 noncommissioned staff officers. | 10.00 | 200.00 |
|  | .....do | Quarters for 1 noncommissioned staff officer. | 9.00 | 54.90 |
| Fort Williams, Me | 3-room house. | Quarters for quartermaster-sergeant | 12.00 | 144.00 |
|  | .....do | Quarters for commissary-sergeant | 12.00 | 144.00 |
| Atlanta, Ga | 36 rooms | Offices headquarters Department of the Gulf. | 500.00 | 2,536.00 |
|  | 1 room | Warehouse, Department of the Gulf | 50.00 | 348.33 |
|  | 1 building | Stable, Department of the Gulf | 75.00 | 360.00 |
|  | .....do | Quartermaster's warehouse | 75.00 | 300.00 |
|  | 3 buildings | Subsistence warehouse | 300.00 | 1,245.00 |
|  | 2 buildings | Medical supply depot | 233.33 | 433.33 |
|  | 4 rooms | Quarters for enlisted men | 12.00 | 48.00 |
| Wilmington, Del | 1 room | Office for inspector of powder | 17.67 | 192.60 |
| New Orleans, La | 1 building | Offices | 83.33 | 999.96 |
|  | .....do | Storehouses | 100.00 | 1,200.00 |
| Delaware City, Del | 2 rooms | Office | 30.60 | 80.00 |
| Newport, R. I | .....do | Office for constructing quartermaster | 28.00 | 336.00 |
|  | 1 room | .....do | 12.00 | 72.00 |
| Baltimore, Md | Warehouse | Storage | 35.00<br>41.66 | 291.32 |
|  | 2 rooms | Offices for depot quartermaster | 50.00 | 600.00 |
|  | 1 room | Drafting and plan room in connection with building at Fort Howard, Md | 20.00 | 40.00 |
| Chattanooga, Tenn | .....do | Quarters for post quartermaster-sergeant. | 12.00 | 110.20 |
|  | .....do | Office for depot quartermaster | 25.00 | 100.00 |
| Middletown (Camp Meade), Pa. | Land | Camp site | 3.00 and 4.00 per acre. | 6,731.00 |
|  | 1 room | Office for quartermaster | 10.00 | 10.00 |
| South Framingham, Mass. | Rooms | Office | .......... | 122.90 |
|  | .....do | Lodgings | .......... | 2.00 |
| Fort Monroe, Va | Land | Site for general hospital | 41.66 | 500.00 |

APPENDIX B.—*Property rented by the Quartermaster's Department for use as offices, storehouses, barracks, quarters, etc., during the fiscal year, and the amount of rent paid therefor*—Continued.

### DEPARTMENT OF THE EAST—Continued.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Savannah, Ga | Warehouses | Storage | $701.25 | $701.25 |
| | Building | Medical department | 280.00 | 280.00 |
| | do | Quartermaster's department | 8.00 | 16.00 |
| | Ground | Corral | 25.00 | 25.00 |
| | 1 room | Medical department, storage | 10.00 | 20.00 |
| | Warehouses | Quartermaster's department | 285.00 | 285.00 |
| | Offices | do | 182.50 | 265.00 |
| | 1 room | Quarters for commissary-sergeant | 12.00 | 12.00 |
| | Ground | General hospital site | 62.50 | 750.00 |
| | Building | Warehouse | 160.00 | 160.00 |
| | Offices | Quartermaster's department | 65.00 | 65.00 |
| | Warehouses | do | 80.00 | 80.00 |
| Total | | | | 31,645.51 |

### DEPARTMENT OF THE LAKES.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Chicago, Ill | 29 rooms | Offices for department headquarters | $1,000.00 | $12,000.00 |
| | 3 rooms | Offices | 75.00 | 450.00 |
| | 1 room | do | 50.00 | 600.00 |
| | Building | Warehouse | 200.00 | 2,400.00 |
| | do | Stable | 150.00 | 1,800.00 |
| | do | Commissary storehouse | 418.66 | 555.55 |
| | do | do | 508.33 | 5,540.80 |
| | 1 room | Quarters | 12.00 | 144.00 |
| Cincinnati, Ohio | | Offices and warehouses, quartermaster and commissary departments. | 150.00 | 1,125.00 |
| Total | | | | 24,615.35 |

### DEPARTMENT OF TEXAS.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Sabine Pass, Tex | 1 room | Noncommissioned staff officers' quarters. | $12.00 | $47.00 |
| Galveston, Tex | 2 rooms | do | 24.00 | 288.00 |
| Hebbronville, Tex | 1 room | Office for quartermaster's agent | 8.00 | 96.00 |
| San Antonio (Camp Capron), Tex. | Land | Camping ground for Thirty-third U. S. Volunteer Infantry. | 100.00 | 200.00 |
| Total | | | | 631.00 |

### DEPARTMENT OF DAKOTA.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Camp Bacon, Minn | 3 rooms | Quarters for captain commanding | $36.00 | $76.80 |
| | 2 rooms | Office for commanding officer | 30.00 | 328.00 |
| | do | Quarters for first lieutenant | 24.00 | 249.60 |
| | do | Quarters for second lieutenant | 24.00 | 257.60 |
| | do | Quarters for acting assistant surgeon | 24.00 | 262.40 |
| | 2 storehouses | Quartermaster's department | 10.00<br>13.00 | 231.46 |
| | do | Subsistence department | 6.00 | 65.60 |
| | Building | Barrack for men | 75.00 | 820.00 |
| | 1 building | Stable, quartermaster's department | 6.00 | 65.60 |
| | Building | Hospital | 35.00<br>50.00 | 472.67 |
| Bismarck, N. Dak | do | Stable | 8.00 | 81.07 |
| | 2 rooms | Office for constructing quartermaster | 35.00 | 373.33 |
| Total | | | | 3,284.13 |

**APPENDIX B.**—*Property rented by the Quartermaster's Department for use as offices, storehouses, barracks, quarters, etc., during the fiscal year, and the amount of rent paid therefor*—Continued.

### DEPARTMENT OF THE MISSOURI.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Omaha, Nebr | 39 offices with vaults, closets, etc. | Headquarters, Department of the Missouri. | $666.66 | $8,000.00 |
| Ogden, Utah | 2 rooms | Quartermaster's agent | 25.00 | 300.00 |
| Kinswick, Mo | Land | Camp site | [a]5.00<br>6.00 | 28.00 |
| Festus, Mo | ....do | ....do | [a]6.00 | 12.00 |
| Jadee, Mo | ....do | ....do | [a]5.00<br>10.00 | 15.00 |
| Drake's Farm, Mo | ....do | ....do | [a]3.60 | 3.60 |
| Platin Creek, Mo | ....do | ....do | [a]5.00 | 5.00 |
| Rush Springs, Ind. T | Corral and rooms. | Shelter for mules and teamsters | 25.00 | 300.00 |
| Total |  |  |  | 8,663.60 |

### DEPARTMENT OF THE COLORADO.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Cooleys, Ariz | 1 room | Quarters for signal sergeant | $12.00 | $144.00 |
| Denver, Colo | ...do | ....do | 12.00 | 144.00 |
|  | ...do | ....do | 12.00 | 13.60 |
|  | ...do | Storeroom | 40.00 | 480.00 |
|  | 47 rooms | Offices, etc | 684.66 | 8,215.92 |
|  | Building | Stables | 50.00 | 600.00 |
| Hellner's Ranch, Ariz | 1 room | Quarters for signal sergeant | 12.00 | 84.00 |
| Holbrook, Ariz | ...do | Offices for quartermaster's agent | 5.00 | 60.00 |
| Price, Utah | ...do | Quarters for signal sergeant | 12.00 | 119.20 |
|  | ...do | Warehouse | 15.00 | 180.00 |
| Silver City, N. Mex | ...do | Quarters for signal sergeant | 12.00 | 76.00 |
| Wilcox, Ariz | ...do | ....do | 12.00 | 120.40 |
| Total |  |  |  | 10,237.12 |

### DEPARTMENT OF CALIFORNIA.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| San Francisco, Cal | 45 rooms | Offices, headquarters Department of California. | $750.00 | $9,000.00 |
|  | 4 rooms | Offices of additional paymasters at department headquarters. | 20.00 | 321.99 |
|  | 2 rooms | ....do | 22.50 | 270.75 |
|  | 1 room | ....do | 25.00 | 150.00 |
|  | ....do | ....do | 15.00 | 53.00 |
|  | ....do | Office of chief mustering officer | 28.00 | 155.87 |
|  | 6 rooms | Quarters of enlisted men on duty in office adjutant-general, Department of California. | 12.00 | 450.40 |
|  | ....do | Quarters for hospital corps | 12.00 | 626.40 |
|  | ....do | Quarters for signal corps | 12.00 | 173.20 |
|  | 1 room | Quarters for enlisted men on duty in office inspector-general, Department of California. | 12.00 | 44.80 |
| United States general hospital, Presidio of San Francisco, Cal. | ....do | Quarters of post quartermaster-sergeant. | 12.00 | 72.00 |
| San Diego Barracks, Cal. | Building | Hospital | 70.00 | 840.00 |
|  | 7 rooms | Quarters for officers | 12.00 | 1,000.00 |
|  | 2 rooms | Quarters for quartermaster-sergeant and commissary-sergeant. | 12.00 | 280.00 |
| Honolulu, H. I | 4 rooms | Offices for depot quartermaster | 96.67 | 1,160.04 |
|  | Buildings and grounds. | United States hospital at Buena Vista | 280.00 | 3,360.00 |
|  | Buildings | Storehouse for depot quartermaster's department. | 125.00 | 1,500.00 |
|  | ....do | Office and storehouse, subsistence department. | 150.00 | 1,800.00 |
|  | 12 acres | Paddocks and corral for animals, quartermaster's department. | 100.00 | 1,200.00 |
|  | 53.208 acres | Stock depot for animals held from transports en route to the Philippine Islands. | 40.00 | 374.67 |

[a] Per day.

**Appendix B.**—*Property rented by the Quartermaster's Department for use as offices, storehouses, barracks, quarters, etc., during the fiscal year, and the amount of rent paid therefor*—Continued.

### DEPARTMENT OF CALIFORNIA—Continued.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Honolulu, H. I. | About 15 acres | For location of an emergency hospital for reception, detention, and treatment of possible bubonic-plague patients. | $100.00 | $500.00 |
| | 3.62 acres | Use of United States troops of lands in the Kapaluilu district, near Honolulu, H. I. (Camp McKinley). | 50.00 | 600.00 |
| | 2.95 acres | do | 45.00 | 540.00 |
| | do | do | 45.00 | 540.00 |
| | 3.45 acres | do | 50.00 | 600.00 |
| | Grounds | Pasturage for animals held from transports for reshipment to the Philippine Islands. | | 945.64 |
| | | Officers' quarters | | 1,367.60 |
| | | Lodgings for noncommissioned staff officers. | | 552.00 |
| | About 15 acres | Paddock and corral for transient animals diseased or suspected of disease. | 40.00 | 233.33 |
| Total | | | | 28,711.69 |

### DEPARTMENT OF THE COLUMBIA.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Vancouver Barracks, Wash. | Frame building. | Quarters for signal sergeant | $10.00 | $20.00 |
| | Field | Camp ground for volunteers on practice march. | | 5.00 |
| Portland, Oreg | 7 rooms | Offices of chief and post paymaster and depot quartermaster. | 111.00 | 1,332.00 |
| Astoria, Oreg | 2 rooms | Office for constructing quartermaster | 30.00 | 225.00 |
| Seattle, Wash | 4 rooms | do | 38.00 | 38.00 |
| | 1 large room subdivided into three. | do | 65.00 | 715.00 |
| | 1 stable and warehouse. | For constructing quartermaster | 15.00 | 180.00 |
| Tacoma, Wash | 1 room | Office for superintendent of transportation. | 20.00 | 100.00 |
| | Desk and chairs. | For use in office of superintendent of transportation. | 4.25 | 21.25 |
| Seattle, Wash | 3 blocks and sheds. | Corral and pasture for public animals in keeping at Seattle, awaiting transportation. | 30.00 | 270.00 |
| | Frame building. | Accommodation of stock tenders at corral ground. | 15.00 | 47.50 |
| Tacoma, Wash | Tents | Accommodation of troops in temporary camp. | 14.00 | 14.00 |
| Seattle, Wash | Tents | do | 28.10 | 28.10 |
| | Warehouse | Temporary stable for care and treatment of injured public animals removed from transport Victoria. | 75.00 | 130.65 |
| | do | Distributing warehouse goods for Alaska. | 150.00 | 300.00 |
| | 6 office rooms. | Use of temporary headquarters Department of Alaska. | 300.00 | 800.00 |
| | 1 room | Storeroom, Department of Alaska | 40.00 | 86.66 |
| | do | Use of commissary department | 35.00 | 29.17 |
| | do | Use of signal corps | 50.00 | 16.67 |
| | 5 rooms | Use of chief quartermaster, Department of Alaska. | 75.00 | 165.00 |
| | 1 room | Use of signal corps | 50.00 | 21.67 |
| | Space in storage warehouse. | Storage of fixtures removed from transport Ohio. | 25.00 | 225.00 |
| | do | Storage of miscellaneous supplies awaiting shipment to various points. | | 20.70 |
| | Accommodations in hotel. | Lodging for enlisted men and Alaska packers detained at Seattle awaiting transportation. | a 1.00 | 513.00 |
| | do | do | 1.00 | 124.25 |
| | Lodging house | Temporary quarters for civilians in charge of injured animals removed from transport Victoria. | b 1.25 | 99.99 |
| Total | | | | 5,528.61 |

a Per day per man. b Per week.

APPENDIX B.—*Property rented by the Quartermaster's Department for use as offices, storehouses, barracks, quarters, etc., during the fiscal year, and the amount of rent paid therefor*—Continued.

### DEPARTMENT OF ALASKA.

| Post or station | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Dyea, Alaska | Building and wharf. | Quarters, barracks, and storeroom | $135.00 | $135.00 |
| Skagway, Alaska | Buildings | Quarters, barracks, hospital, and storehouse. | .......... | 3,865.62 |
| Fort Wrangle, Alaska | 1 building | Officers' quarters | 16.00 | 176.00 |
| | do | do | 10.00 | 12.67 |
| | do | do | 20.00 | 195.33 |
| | do | do | 20.00 | 20.00 |
| | do | Barracks | 50.00 | 550.00 |
| | do | Hospital | 20.00 | 220.00 |
| | do | Hospital stewards' quarters | 10.00 | 110.00 |
| | do | Bath house | 5.00 | 40.00 |
| Yukon Points | Cabins | Quarters | .......... | 289.00 |
| Circle City, Alaska | do | Quarters, storehouses, shops, and barracks. | 180.00 | [a]2,160.00 |
| Fort St. Michael, Alaska | Buildings | Barracks, quarters, hospitals, storehouses, etc. | 300.00 | [a]3,170.00 |
| Rampart City, Alaska | 1 cabin | Officers' quarters | 15.00 | 165.00 |
| | do | do | 24.00 | 264.00 |
| | 1 room | Commissary storehouse | 30.00 | 60.00 |
| Total | | | .......... | 11,432.62 |

### DEPARTMENT OF PORTO RICO.

| | | | | |
|---|---|---|---|---|
| Aguadillia | 5-room house. | Officers' quarters | $15.00 | $180.00 |
| | 4-room house. | do | 24.00 | 288.00 |
| | do | do | 24.00 | 24.00 |
| | do | Noncommissioned staff officers' quarters. | 12.00 | 132.00 |
| | 3-room house. | Hospital | 15.00 | 180.00 |
| | 7-room house. | Barracks | 15.00 | 180.00 |
| | Storehouse | Quartermaster stores | 15.00 | 180.00 |
| | do | Commissary stores | 24.15 | 147.60 |
| | do | do | 18.00 | 162.00 |
| Adjuntas | Corral | Public animals | 37.50 | 28.75 |
| | Storehouse | Quartermaster and commissary stores | 18.75 | 8.12 |
| | House | Hospital | 22.00 | 8.33 |
| | do | Officers' quarters | 32.50 | 7.56 |
| | do | Barracks | 25.00 | 179.17 |
| | do | Guardhouse | 6.00 | 1.60 |
| | Warehouse | Barracks | 40.00 | 13.33 |
| | do | do | 21.00 | 2.80 |
| | Storehouse | Quartermaster supplies | 18.75 | 18.75 |
| | Corral and yard. | Public animals | 9.00 | 95.67 |
| | 6-room house. | Hospital | 19.00 | 99.43 |
| | do | Officers' quarters | 18.00 | 66.60 |
| | 7-room house. | Quartermaster and commissary stores | 55.00 | 471.00 |
| | 6-room house. | Officers' quarters | 30.00 | 248.67 |
| | 10-room house | Barracks | 50.00 | 582.50 |
| | Corral and yard. | Public animals | 6.00 | 60.00 |
| | do | do | 37.50 | 72.00 |
| | do | do | 9.00 | 87.00 |
| | Storehouse, 1 room. | Barracks | 20.00 | 194.00 |
| | Storehouse | Quartermaster stores | 2.00 | 2.00 |
| | Storehouse, 1 room. | Barracks | 6.00 | 51.00 |
| | Room | Officers' quarters | 9.30 | 50.10 |
| | do | Quartermaster stores | 1.80 | 1.80 |
| | 8-room house. | Hospital | 15.00 | 88.50 |
| | 2-room house. | Noncommissioned staff officers' quarters. | 12.00 | 38.00 |
| | House | Barracks | 6.60 | 16.06 |
| | do | do | 12.00 | 10.00 |
| | Yard | Public animals | 6.00 | 5.00 |
| | Lot | do | 6.00 | 6.00 |
| Aibonito | 6-room house. | Officers' quarters | 20.00 | 200.00 |
| | 7-room house. | do | 15.00 | 62.50 |
| | House | Quartermaster stores | 21.00 | 260.71 |
| | Field, 125 acres | Drill ground | 50.00 | 600.00 |
| | 5-room house. | Quarters' detachment | 10.00 | 120.00 |
| | Field | Corrall detachment | 6.96 | 83.50 |

[a] Approximately.

APPENDIX B.—*Property rented by the Quartermaster's Department for use as offices, storehouses, barracks, quarters, etc., during the fiscal year, and the amount of rent paid therefor*—Continued.

### DEPARTMENT OF PORTO RICO—Continued.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Cayey | 3-room house | Officers' quarters | $21.00 | $238.00 |
| | 2-room house | do | 20.00 | 160.00 |
| | do | do | 18.00 | 210.00 |
| | 4-room house | Commissary stores | 15.00 | 170.00 |
| | 7-room house | Quartermaster stores | 25.00 | 235.83 |
| | Field, 100 acres | Drill ground | 25.00 | 300.00 |
| | Room | Noncommissioned staff officers' quarters | 9.00 | 108.00 |
| | Field, 3 acres | Corral detachment | 12.50 | 150.00 |
| | Field | Camp | 12.00 | 66.72 |
| | do | do | 34.60 | 155.90 |
| | do | do | 12.00 | 48.00 |
| Humacao | Building | Hospital | 21.00 | 252.00 |
| | do | Barracks | 50.00 | 385.85 |
| | do | do | 60.00 | 221.25 |
| | do | Quartermaster's and commissary stores | 50.00 | 600.00 |
| | Corral and shed. | Public animals | 60.00 | 720.00 |
| | 7-room house | Officers' quarters | 84.00 | 907.76 |
| | Room | Noncommissioned staff officers' quarters | 12.00 | 144.00 |
| | Field, 20 acres | Pasture | 15.00 | 185.00 |
| | Field, 15 acres | Pasture, stable | 20.00 | 180.00 |
| Manati | 14-room house | Hospital | 20.00 | 280.00 |
| | 7-room house | Post headquarters | 9.38 | 112.56 |
| | 12-room house | Barracks | 39.00 | 263.20 |
| | do | do | 37.50 | 450.00 |
| | Lot | Stable | 9.38 | 112.56 |
| | do | Corral | 8.00 | 96.00 |
| | Field | Drill ground | 15.00 | 71.00 |
| | 4-room house | Quarters | 10.00 | 84.00 |
| | 11-room house | Officers' quarters | 36.00 | 324.00 |
| | Storehouse | Commissary stores | 16.00 | 191.00 |
| | do | Quartermaster's stores | 30.00 | 126.00 |
| | do | do | 10.00 | 90.00 |
| | House | Quartermaster's office | 10.00 | 10.00 |
| | 3-room house | Barracks | 30.00 | 270.00 |
| | Shed | Stable | 5.00 | 45.00 |
| | 3-room house | Barracks | 20.00 | 120.00 |
| | Shed | Stable | 10.00 | 60.00 |
| | 3-room house | Barracks | 10.00 | 20.00 |
| | Shed | Stable | 5.00 | 10.00 |
| Arecibo | Storehouse | Medical supplies | 16.67 | 133.36 |
| | 10-room house | Officers' quarters | 106.68 | 853.44 |
| | 5-room house | Commissary stores | 20.00 | 180.00 |
| | 10-room house | Barracks | 60.00 | 520.00 |
| | 2-room house | Guardhouse | 5.34 | 32.04 |
| | House | Forage room | 7.20 | 28.80 |
| | Field, 15 acres | Corral | 87.34 | 786.06 |
| | House | Barracks | 25.00 | 75.00 |
| | do | do | 24.00 | 81.06 |
| | House, 3 rooms | Officers' quarters | 24.00 | 72.00 |
| | do | do | 24.00 | 96.00 |
| Mayaguez | House | Quartermaster's stores | 70.00 | 840.00 |
| | do | Quartermaster's and commissary stores | 60.00 | 400.00 |
| | do | Commissary office | 50.00 | 600.00 |
| | do | Quartermaster's shops | 30.00 | 360.00 |
| | do | Granary, etc | 100.00 | 1,200.00 |
| | Shed | Stable | 50.00 | 450.00 |
| | House | Quarters | 15.00 | 180.00 |
| | Stable | Cavalry horses | 35.00 | 420.00 |
| | Lot | Drill ground | 10.00 | 120.00 |
| | do | Stable | 10.00 | 120.00 |
| | House | Hospital | 72.00 | 796.00 |
| | do | Hospital supplies | 24.00 | 148.00 |
| | do | Relief supplies | 35.00 | 420.00 |
| | 5-room house | Officers' quarters | 60.00 | 342.00 |
| | 4-room house | do | 48.00 | 206.40 |
| | 6-room house | do | 68.00 | 476.00 |
| | 3-room house | do | 36.00 | 233.20 |
| | do | do | 36.00 | 195.60 |
| | do | do | 24.00 | 157.60 |
| | 2-room house | do | 24.00 | 288.00 |
| | do | do | 24.00 | 209.60 |
| | 3-room house | do | 36.00 | 117.60 |
| | 4-room house | do | 48.00 | 576.00 |
| | 2-room house | do | 24.00 | 240.00 |
| | 3-room house | do | 36.00 | 248.00 |
| | 5-room house | do | 46.00 | 190.38 |
| | 2 rooms | do | 24.00 | 247.20 |

APPENDIX B.—*Property rented by the Quartermaster's Department for use as offices, storehouses, barracks, quarters, etc., during the fiscal year, and the amount of rent paid therefor*—Continued.

DEPARTMENT OF PORTO RICO—Continued.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| Mayaguez | 2-room house. | Officers' quarters | $24.00 | $40.80 |
| | 4-room house. | do | 48.00 | 419.20 |
| | 8-room house. | do | 36.00 | 340.80 |
| | do | do | 36.00 | 132.00 |
| | 4-room house. | do | 48.00 | 123.20 |
| | 5-room house. | do | 42.50 | 77.92 |
| | 2-room house. | do | 24.00 | 86.80 |
| | do | do | 24.00 | 240.00 |
| | 1-room house. | do | 12.00 | 24.00 |
| | House | Noncommissioned staff officers | 12.00 | 144.00 |
| | do | do | 12.00 | 144.00 |
| | do | do | 12.00 | 100.40 |
| | do | Barracks | 100.00 | 123.33 |
| | 2 rooms | Officers' quarters | 24.00 | 100.80 |
| | Lot | Wood yard | 8.00 | 88.00 |
| | House | Quartermaster's stores | 12.00 | 63.60 |
| | do | Commissary stores | 16.00 | 82.67 |
| | Shed | Cavalry stables | 60.00 | 120.00 |
| | House | Glandered horses | 15.00 | 45.00 |
| | Field | Drill ground | 30.00 | 47.00 |
| | do | do | 5.00 | 15.00 |
| | House | Hospital | 18.00 | 216.00 |
| | Room | Office for commanding officer | 5.00 | 60.00 |
| | 2-room house. | Officers' quarters | 20.00 | 240.00 |
| | House | Noncommissioned staff officers' quarters. | 12.00 | 144.00 |
| | Field | Drill ground | 18.00 | 216.00 |
| | House | Barracks | 18.00 | 86.00 |
| | do | Officers' quarters | 12.00 | 27.20 |
| | do | Barracks stables | 36.00 | 72.00 |
| | do | Barracks | 21.00 | 177.80 |
| | do | Relief stores | 15.00 | 57.90 |
| | Barracks | Barracks | 24.00 | 264.00 |
| | House | Relief stores | 10.00 | 86.67 |
| | do | do | 12.00 | 64.50 |
| Ponce | 5-room house. | Officers' quarters | 33.00 | 808.00 |
| | 6-room house. | do | 36.00 | 324.00 |
| | 5-room house. | do | 30.00 | 185.00 |
| | 4-room house. | do | 24.00 | 172.00 |
| | 6-room house. | Barracks, Porto Rican Regiment | 30.00 | 180.00 |
| | 5-room house. | Officers' quarters | 24.00 | 30.40 |
| | 8-room house. | do | 45.00 | 297.50 |
| | 5-room house. | do | 24.00 | 51.20 |
| | 8-room house. | do | 46.88 | 93.76 |
| | 4-room house. | do | 24.00 | 80.00 |
| | 3-room house. | do | 20.00 | 75.32 |
| | 4-room house. | Noncommissioned staff officers' quarters | 12.00 | 144.00 |
| | do | do | 12.00 | 118.00 |
| | do | do | 12.00 | 108.00 |
| | 7-room house. | Barracks, Porto Rican Regiment | 33.00 | 198.00 |
| | do | do | 30.00 | 180.00 |
| | 16-room house | do | 60.00 | 60.00 |
| | 2-room house. | Barracks, Eleventh Infantry | 10.00 | 80.00 |
| | 3-room house. | do | 25.00 | 87.50 |
| | 1-room house. | Storehouse | 30.00 | 800.00 |
| | 2-room house. | do | 60.00 | 540.00 |
| | 1-room house. | Storehouse at Playa | 30.00 | 149.00 |
| | 2-room house. | Storehouse | 62.50 | 250.00 |
| | 8-room house. | Quartermaster's office | 46.88 | 46.88 |
| | Field, 2½ acres | Corral | 60.00 | 480.00 |
| | Field, 65 acres | do | 60.00 | 800.00 |
| | Field, 2½ acres | do | 62.50 | 250.00 |
| | Field, 65 acres | do | 50.00 | 800.00 |
| | Land, 5 acres. | Cemetery | 7.00 | 84.00 |
| | Land, ½ acre. | Reservoir | 1.00 | 4.00 |
| | do | Stable | 1.00 | 9.00 |
| | Land, 1½ acres | Sanitary camp | 6.00 | 48.00 |
| | Land, ¾ acre. | Pumping station | 20.85 | 249.96 |
| | Land, 5 acres. | Drill ground | 30.00 | 268.00 |
| San Juan | Land | Storing coal | 15.00 | 20.00 |
| | 1 room | Noncommissioned staff officers' quarters | 12.00 | 12.00 |
| | 2 rooms | Commissary depot | 50.00 | 173.33 |
| | 1 room house. | Quartermaster's storehouse | 25.00 | 800.00 |
| | Land | Corral, pasture | 100.00 | 1,200.00 |
| | 1 room | Noncommissioned staff officers' quarters. | 12.00 | 127.00 |
| | do | do | 12.00 | 144.00 |
| | 2 rooms | Officers' quarters | 20 00 | 140.00 |
| | do | do | 23.00 | 115.00 |
| | Land | Cemetery | 6.00 | 72.00 |

**Appendix B.**—*Property rented by the Quartermaster's Department for use as offices, storehouses, barracks, quarters, etc., during the fiscal year, and the amount of rent paid therefor*—Continued.

DEPARTMENT OF PORTO RICO—Continued.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| San Juan | Land | Camp ground | $6.00 | $6.00 |
| | 2 rooms | Officers' quarters | 12.80 | 12.80 |
| | do | do | 24.00 | 188.00 |
| | 1 room | Noncommissioned staff officers' quarters. | 4.40 | 4.40 |
| | do | do | 4.40 | 4.40 |
| | do | do | 12.00 | 96.00 |
| | do | do | 12.00 | 84.00 |
| | 2 rooms | Officers' quarters | 24.00 | 240.00 |
| | do | do | 24.00 | 256.60 |
| | 1 room | Noncommissioned staff officers' quarters. | 12.00 | 44.00 |
| | 2 rooms | Officers' quarters | 24.00 | 132.00 |
| | do | do | 24.00 | 24.00 |
| | 1 room | do | 9.60 | 9.60 |
| | 2 rooms | do | 24.00 | 112.80 |
| | do | do | 10.40 | 10.40 |
| | do | do | 8.80 | 8.80 |
| | do | do | 24.00 | 24.00 |
| | Land | Pasture | 96.00 | 96.00 |
| | 7 rooms | Paymaster's offices | 150.00 | 450.00 |
| | Land | Pasture | 96.00 | 768.00 |
| | do | Camp ground | 1.20 | 1.20 |
| | do | do | 7.20 | 7.20 |
| | 1 room | Noncommissioned staff officers' quarters. | 12.00 | 144.00 |
| | Land | Stable, corral | 25.00 | 275.00 |
| | Building | Relief stores | 14.37 | 14.37 |
| | do | do | 12.00 | 12.00 |
| | do | do | 8.00 | 8.00 |
| | do | do | 18.75 | 187.50 |
| | Stable | do | 7.60 | 7.60 |
| | 2 rooms | Officers' quarters | 6.40 | 6.40 |
| | do | do | 6.40 | 6.40 |
| | do | do | 6.40 | 6.40 |
| | do | do | 10.40 | 10.40 |
| | 1 room | Noncommissioned staff officers' quarters. | 12.00 | 48.00 |
| Total | | | | 41,274.82 |

GENERAL DEPOTS OF THE QUARTERMASTER'S DEPARTMENT.

| | | | | |
|---|---|---|---|---|
| Philadelphia depot | House and stable, 20 rooms. | Quartermaster's offices and stable | $291.67 | $3,500.04 |
| | Storehouse, 4 rooms. | Storage of quartermaster's supplies | 916.67 | 11,000.04 |
| New York depot | Building | Office and storage, quartermaster's department. | 416.66 | 5,000.00 |
| | do | Storage, quartermaster's department | 1,500.00 | 9,000.00 |
| | do | do | 400.00 | 2,800.00 |
| | do | do | 200.00 | 1,400.00 |
| | do | Office and storage, medical department. | 1,000.00 | 12,000.00 |
| | 3 lofts | Storage, quartermaster's department | 35.00 | 35.00 |
| | Building | Storage, commissary department | 416.66 | 1,458.31 |
| | do | do | 125.00 | 1,125.00 |
| | do | do | 100.00 | 900.00 |
| | do | Stable and carriage house for public animals, etc. | 112.50 | 1,350.00 |
| | 1 room | Quarters for hospital steward on duty with attending surgeon. | 14.00 | 168.00 |
| | do | Quarters for hospital steward on temporary duty. | 12.00 | 228.00 |
| | do | Storeroom for army transport service | 100.00 | 1,200.00 |
| | 2 rooms | do | 250.00 | 1,383.33 |
| | 1 room | do | 125.00 | 600.00 |
| | 2 rooms | do | 300.00 | 360.00 |
| St. Louis depot | Building | Stable for quartermaster's department | 25.00 | 300.00 |
| | do | Storehouse for subsistence department | 75.00 | 900.00 |
| | do | Storehouse for medical department | 84.17 | 1,010.04 |
| | do | do | 166.67 | 2,000.04 |
| San Francisco depot | 2 rooms | Quarters for commissary-sergeants | 12.00 | 174.80 |
| | 2-story and basement brick building. | Offices and storehouse for the medical and quartermaster's departments and army transport service. | 666.67 | 8,000.00 |

APPENDIX B.—*Property rented by the Quartermaster's Department for use as offices, storehouses, barracks, quarters, etc., during the fiscal year, and the amount of rent paid therefor*—Continued.

GENERAL DEPOTS OF THE QUARTERMASTER'S DEPARTMENT—Continued.

| Post or station. | Kind of property and number of rooms. | Purpose for which used. | Monthly rate of rent. | Total amount for year. |
|---|---|---|---|---|
| San Francisco depot... | 5-story and basement stone and brick building. | Offices and storehouse for the subsistence department. | $750.00 | $9,000.00 |
| | 5-story and basement brick building. | For storage of quartermaster's supplies.. | 400.00 | 4,800.00 |
| | Part of brick building, first floor and basement. | .....do.................................. | 75.00 | 825.00 |
| | 4-story brick building and basement. | For storage of medical supplies.......... | 200.00 | 2,066.67 |
| | 1-story brick building. | For storage of quartermaster's supplies.. | 300.00 | 1,500.00 |
| | 6-story and basement brick building. | Offices and storehouse, medical department and quartermaster's supplies. | 1,000.00 | 2,000.00 |
| | Stable room .. | For horse and wagon belonging to United States Commissary Department. | 7.50 | 63.75 |
| | Storage room. | For Government property.............. | *a* .25 | 213.52 |
| | Storage room. | Storage of mineral oil, turpentine, etc .. | (*b*) | 98.95 |
| Washington depot..... | 1 room........ | Quarters for sergeant on duty at army headquarters. | 12.00 | 4.00 |
| | Lots 49 to 58, and 63, and parts of 59 to 62, square 100. | Stables and storehouses................. | 175.00 | 2,100.00 |
| | Lots 506, 508, and 510, square 628. | Quartermaster's storehouses............ | 150.00 | 1,800.00 |
| | 1 room........ | Quarters for hospital steward on duty at office attending surgeon. | 21.00 | 252.00 |
| | .....do........ | Quarters for hospital steward............ | 12.00 | 144.00 |
| | .....do........ | .....do................................ | 12.00 | 127.20 |
| | .....do........ | Quarters for hospital corps private ...... | 12.00 | 144.00 |
| | .....do........ | Quarters for signal sergeant ............ | 12.00 | 52.40 |
| | .....do........ | Quarters for private on duty at army headquarters. | 12.00 | 144.00 |
| | .....do........ | .....do................................ | 12.00 | 130.80 |
| | .....do........ | .....do................................ | 12.00 | 104.00 |
| | .....do........ | Quarters for signal sergeant ............ | 12.00 | 144.00 |
| | .....do........ | Quarters for private of signal corps...... | 12.00 | 104.80 |
| | .....do........ | Quarters for hospital steward............ | 12.00 | 139.60 |
| | .....do........ | Quarters for hospital corps private ...... | 12.00 | 144.00 |
| | .....do........ | Quarters for sergeant .................... | 12.00 | 85.20 |
| | .....do........ | Quarters for hospital steward............ | 12.00 | 37.20 |
| | .....do........ | Office for Maj. J. B. Bellinger, quartermaster, U. S. Volunteers. | 20.00 | 108.00 |
| | .....do........ | Office for military attaché at Petropolis, Brazil. | 20.625 | 41.25 |
| Total ............ | ............... | ...................................... | .......... | 92,266.94 |

RECAPITULATION.

| | |
|---|---|
| Department of the East ........................................ | $31,645.51 |
| Department of the Lakes........................................ | 24,615.35 |
| Department of Texas........................................... | 631.00 |
| Department of Dakota ......................................... | 3,284.13 |
| Department of the Missouri.................................... | 8,663.60 |
| Department of the Colorado ................................... | 10,237.12 |
| Department of California ..................................... | 28,711.69 |
| Department of the Columbia.................................... | 5,528.61 |
| Department of Alaska ......................................... | 11,432.62 |
| Department of Porto Rico...................................... | 41,274.32 |
| General depots of the Quartermaster's Department.............. | 92,266.94 |
| Total ........................................................ | 258,290.89 |

*a* Per ton.

*b* 1 cent per gallon in cases; 5 cents per barrel.

## APPENDIX C.

*Hire of labor charged to the appropriations for "Barracks and quarters, 1899–1900," and not covered by specific allotments for construction and repair.*

| Post or station. | Character of services. | Monthly rate of pay. | Total for the year. |
|---|---|---|---|
| Governors Island, N. Y | Carpenter | $75.00 | $900.00 |
| Fort Wood, New York Harbor. | Mechanic | 75.00 | 900.00 |
| New York depot | Carpenter (repairs to army building) | 85.00 | 1,020.00 |
| Fort Screven, Ga | Carpenter | 100.00 | 120.00 |
| Jeffersonville depot | Superintendent | 125.00 | 291.67 |
| Fort Sheridan, Ill | Carpenter | 60.00 | 250.80 |
| Fort Meade, S. Dak | Engineer for sawmill | 83.33 | 999.96 |
| San Francisco, Cal., depot | Carpenter and inspector of building material | 90.00 | 1,080.00 |
| Seattle, Wash | Lumber inspector for material purchased for Alaska and Manila. | 100.00 | 616.66 |
|  | do | [a]5.00 | 360.00 |
| Total |  |  | 6,539.09 |

[a] Per day.

WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
*Washington, D. C., September 12, 1900.*

GENERAL: I have the honor to submit annual report of the reservation branch of this office for fiscal year ending June 30, 1900.

This branch, under Special Orders, No. 187, of 1898, Adjutant-General's Office, is charged with providing water supply, sewerage, light, and heating of military posts, camps, and stations, hiring of grounds for military purposes, collection and filing of title papers and information pertaining to all lands under charge of the War Department purchased or appropriated for army or other military use, except when designated for permanent military fortifications, or for arsenals, etc.

It is also charged with all correspondence and papers in connection with fire protection, post and reservation maps, surveys, topography, and other miscellaneous subjects.

### OLD FORT BRADY, MICH.

Under terms of act approved July 8, 1886 (General Orders, No. 52, of 1886), the grounds comprising Old Fort Brady, Mich., authorized to be sold, were duly platted, appraised, etc., and under public advertisement the buildings and fences were disposed of at auction in October, 1893, for the sum of $2,072.50.

Fifty-four lots have thus far under the act been sold at public and private sale (at not less than appraised value), total amount realized being $54,073.49, which sum (less cost attending sales) has been deposited in the Treasury.

The remaining 10 lots are in charge of the quartermaster at Fort Brady, Mich., to whom all applications for purchase are made.

On August 25, 1897, the Secretary of War leased for five years from September 7, 1897, at nominal consideration, the "Cemetery lot" to the Soo Light Guards, Company G, Fifth Regiment, Michigan National Guard, for the erection thereon of an armory for drill purposes.

### OLD FORT BLISS, TEX.

Under act approved March 1, 1890, the military reservation of Old Fort Bliss, Tex., was platted, appraised, and advertised for sale at public auction July 3, 1895.

All of the lots (25 in number) have finally been disposed of at public and private sale at full appraised and approved valuation, $15,412, which amount, subject to expenses attending sales, has been deposited to credit of the United States Treasurer.

### OLD FORT OMAHA.

Act approved July 23, 1888 (General Orders, No. 60, of 1888), authorizes the Secretary of War, after purchase of site and construction of new post (now known as Fort Crook, Nebr.), to sell the military reservation known as Fort Omaha.

The new post has been built, but owing to business depression of recent years, legislation looking to its transfer to the State, recent wars, etc., no definite steps have yet been taken with view to disposing of this valuable parcel of land, covering about 80 acres.

In this connection it may be further stated that on January 2, 1900, Lieutenant-General Miles recommended that this reservation be retained, as in his judgment, under changed conditions of affairs, etc., it would be most valuable for military purposes. Further recommended that any steps looking to sale of this land be suspended.

### TYBEE ISLAND, GEORGIA.

Under authority of the Secretary of War of May 3, 1899, the following-described lots, title to which was favorably reported upon by the Attorney-General, were purchased at cost of $400 and paid for August 14, 1899:

GENERAL ORDERS, }
No. 162. }

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
*Washington, September 1, 1899.*

* * * * * * *

II. The following order from the War Department is published for the information and guidance of all concerned:

WAR DEPARTMENT, *Washington, August 28, 1899.*

The following-described lands situated on Tybee Island, Chatham County, Ga., having been acquired by the United States, are hereby announced as a part of the military reservation at that place:

Lots Nos. 145, 146, and 147, as shown on the plat of the subdivision of the Tybee Beach Company's lands made by Percy Sugden, at Savannah, Ga., August 2, 1897, the boundaries of said lots being as follows:

Fronting on the northwest 285 feet on the light-house road, on the northeast 166 feet on the proposed extension of Alger street, on the southeast 337 feet on the lands of Naylor, and on the southwest 295 feet on the right of way of the Tybee Division of the Central of Georgia Railway.

The United States has also the right of way on that strip of land bounding said lot No. 147, on the northeast, known as the extension of Alger street, 40 feet wide, and of a lane to the northeast thereof of 10 feet width, whether the said proposed extension of Alger street and lane be carried out and accomplished as dedicated by the Tybee Beach Company or not.

ELIHU ROOT, *Secretary of War.*

### FORT COLUMBIA, WASH.

In order to control the water supply for Fort Columbia the Secretary of War, on May 4, 1899, authorized the purchase of lots 1 and 2 of sec. 15, and lot 4, sec. 21, T. 9 N., R. 10 W., of the Williamette meridian, covering about 53 acres adjoining said reservation, from the Northern Pacific Railroad Company, for $212.60.

Deed therefor duly executed; favorable opinion given by Attorney-General regarding title and purchase price paid said company by the chief quartermaster, Department of the Columbia.

In connection therewith the President of the United States also, on May 8, 1899, reserved for same purposes lot 9, sec. 22, T. 9 N., R. 10 W., of the Williamette meridian, Pacific County, covering about 33 acres.

II. The following General Order No. 51, 1900, from the War Department is published for the information and guidance of all concerned:

War Department, *Washington, April 17, 1900.*

The President of the United States, by order dated May 8, 1899, having reserved and set apart for military purposes lot 9, sec. 22, T. 9 N., R. 10 W., of the Williamette meridian, located in Pacific County, Wash., the same is hereby announced, in connection with certain adjoining land heretofore purchased, as an addition to the military reservation at Fort Columbia, Wash.

The complete addition to the reservation at Fort Columbia therefore includes the following-described lands in T. 9 N., R. 10 W., of the Williamette meridian, embracing 86.15 acres, more or less, to wit:

Lots 1 and 2 of sec. 15, lot 4 of sec. 21, and lot 9 of sec. 22.

Elihu Root, *Secretary of War.*

### SEACOAST LANDS.

Sundry civil act of July 1, 1898 (General Orders, No. 104, 1898), under head of "Military posts," provided $620,000 for enlargement of military posts, "and for the erection of barracks and quarters for the artillery in connection with the adopted project of seacoast defense," and authorized $50,000 of the above amount, or so much thereof as may be necessary, to be used for the purchase of suitable sites.

Sundry civil act of March 3, 1899 (General Orders, No. 49, 1899), under head of "Military posts," appropriated $100,000 "for the purchase of suitable sites."

By Special Order 37 of 1899, paragraph 59, the Secretary of War appointed a board of officers to meet in Washington February 15, 1899, to investigate and report upon the additional land necessary at the following-named places to provide for the garrison which it was the intention to station at each place; also to ascertain the cost of such additional land and whether the same could be obtained by purchase from the owner or by condemnation proceedings:

Fort Preble, Me.
Portland Head, Me.
Cushings Island, Me.
Great Hog Island, Me.
Fort Constitution, N. H.
Long Island Head (Fort Strong), Mass.
Delaware City (Fort Du Pont), Del.
Finns Point (Fort Mott), N. J.
Hawkins Point, Md.
North Point, Md.
Sullivans Island, S. C.

In this connection the following purchases have been made, by direction of the Secretary of War, after favorable opinion given by Attorney-General regarding title:

| | |
|---|---|
| 15 acres at Long Island Head (Fort Strong) | $18,541.41 |
| 111 acres at Delaware City (Fort Du Pont) | 10,000.00 |
| 120 acres at North Point, Md. (Fort Howard) | 25,114.28 |
| 23 acres at Portland Head (Fort Williams) | 50,000.00 |
| 5 acres at Fort Preble, Me | 10,000.00 |

relative to which the following general orders have been issued:

GENERAL ORDERS, No. 117.

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
*Washington, August 25, 1900.*

* * * * * * *

II. The following order from the War Department is published for the information and guidance of all concerned:

WAR DEPARTMENT, *Washington, August 25, 1900.*

The following-described tract of land situated on Long Island, in Boston Harbor, adjoining the military reservation of Fort Strong, Mass., having been recently purchased for military purposes, is hereby announced as an addition to said reservation:

Beginning at a point at the intersection of a line at mean low water with the line of the present boundary between land of the United States and land supposed now or late to be of the city of Boston, which said point is about two hundred and forty-two (242) feet southeasterly from a stone monument which marks said boundary line, and from said point running about northwesterly in a straight line along said boundary line eight hundred and fifty-eight and fourteen hundredths (858.14) feet to the line of mean low water of Boston Harbor; thence turning and running about southwesterly along the line of mean low water of said harbor about seven hundred and thirty (730) feet to other land supposed to be of the city of Boston; thence turning and running by said land supposed to be of the city of Boston about southeasterly in a straight line parallel with and five hundred and fifty-nine (559) feet distant from said first-mentioned boundary line about fourteen hundred (1,400) feet to the line of mean low water of said harbor; thence turning and running about northerly along the line of mean low water about six hundred and forty (640) feet to the place of beginning, together with all the lands between mean low water and low water bounded on the northeast by the prolongation in a straight line of the northeasterly boundary line of the lands first above described, and on the southwest by the prolongation in a straight line of the southwesterly boundary line of the lands first above described; said lands situate above mean low water being lots A and B, as shown on plan by Hyde & Sherry, civil engineers, dated August 4, 1899, and entitled "Plan showing a portion of Long Island, Boston Harbor," containing approximately fifteen and one hundred and twenty-four thousandths (15.124) acres.

ELIHU ROOT, *Secretary of War.*

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GENERAL ORDERS, No. 207.

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
*Washington, December, 15, 1899.*

The following order from the War Department is published for the information and guidance of all concerned:

WAR DEPARTMENT, *Washington, December 15, 1899.*

The following-described tract of land situate in Red Lion Hundred, in the county of New Castle and State of Delaware, adjoining the military reservation of Fort Du Pont at Battery Point, Delaware, having been recently purchased for military purposes, is hereby announced as an addition to said military reservation, viz:

Beginning at the low-water mark of the Delaware River near Engineers Wharf, in line with east side of Government lane, about thirteen hundred and twenty-seven and three-tenths (1,327.3) feet in a northeasterly direction from a stone in the northwest corner of Government reservation; thence south forty-six degrees five minutes west thirty-two hundred and fifty and five-tenths (3,250.5) feet, more or less, to a corner in north line of Port Penn road; thence north forty-two degrees thirty minutes west one hundred and eigthy-eight and one-tenth (188.1) feet along north line of said road to a corner; thence north thirty-eight degrees and fifty-five minutes east one hundred (100) feet to a corner; thence north twenty-six degrees and thirty minutes west ninety-seven (97) feet to a corner; thence north thirty-eight degrees fifty-five minutes east seven (7) feet to a corner; thence north twenty-six degrees thirty minutes west two hundred and thirty-two (232) feet to a corner; thence south thirty-eight degrees fifty-five minutes west one hundred and five and five-tenths (105.5) feet to a corner in north line of Port Penn road; thence north twenty-six degrees thirty minutes west three hundred and seventeen and twenty-two hundredths (317.22) feet along north line of said road to a corner; thence north thirty-eight degrees fifty-five minutes east one hundred and sixty-one and four hundredths (161.04) feet to a corner; thence north forty-nine degrees forty minutes west eighty-five and eight-tenths (85.8) feet to a corner; thence south thirty-eight degrees fifty-five minutes west one hundred and twenty-eight and four hundredths (128.04) feet to intersection of north line at Port Penn road with east line of East Canal street; thence along east line of East Canal street north eleven degrees thirty minutes east seventeen hundred and forty-six (1,746) feet to a corner; thence south thirty-five degrees fifty minutes east ninety-five and one-tenth (95.1) feet to a corner; thence north forty-one degrees ten minutes east fifty-eight and thirty-eight hundredths (58.38) feet to a walnut tree; thence north forty-seven degrees twenty minutes east seventeen hundred eighty-one and thirty-one hundredths (1,781.31) feet, more or less, to low-water mark of Delaware River; thence along the low-water line of said river to point of beginning; containing one-hundred and eleven and five-tenths (111.5) acres, more or less.

Elihu Root, *Secretary of War.*

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General Orders, No. 44.

Headquarters of the Army,
Adjutant-General's Office,
*Washington April 5, 1900.*

The following act of Congress is published for the information and government of all concerned:

An act making appropriations to supply additional urgent deficiencies in the appropriations for the fiscal year ending June thirtieth, nineteen hundred, and for prior years, and for other purposes.

* * * * * * *

WAR DEPARTMENT.

*Military Posts.*

That the provisions of section three hundred and fifty-five, Revised Statutes, are waived so far as they prohibit the expenditure of public money for the purpose of erecting public buildings on a tract of land recently acquired as a site for necessary buildings at Fort Du Pont, Delaware, before the consent of the legislature of the State of Delaware to the purchase has been given, it being impracticable to apply to the State legislature for consent to its purchase until its next session in January, nineteen hundred and one, and the buildings being urgently required for the shelter of troops.

Approved, March 30, 1900.

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III. The following order from the War Department is published for the information and guidance of all concerned:

War Department, *Washington, April 17, 1900.*

The following-described land, heretofore acquired by purchase at various dates, situate on North Point, in the county of Baltimore and State of Maryland, and named Fort Howard in General Orders, No. 43, April 4, 1900, Adjutant-General's Office, is hereby announced a military reservation, viz:

All that tract of North Point, comprising 148½ acres, more or less, lying south of Denton Creek and south of a line running from a stake planted at the head of said creek north 72½ degrees, west 65.8 perches, to the waters of the Patapsco River (said line being the north line of the land conveyed to the United States by deed from Elizabeth Gunther, dated December 21, 1899), except that tract owned and used by the United States as a light house reservation.

Elihu Root, *Secretary of War,*

GENERAL ORDERS, No. 65.

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
*Washington, May 12, 1900.*

I. The following from the War Department is published for the information and guidance of all concerned:

WAR DEPARTMENT, *Washington, May 11, 1900.*

The following-described lands, heretofore acquired by purchase at various dates, situate in South Portland, in the county of Cumberland, and State of Maine, are hereby announced as an addition to the military reservation at Fort Preble, Maine:

Beginning 4.36 feet south, 43 degrees east from a large iron bolt set in a stone on the southerly side of the Fort road, and at the northwest corner of the military reservation at Fort Preble; Maine, thence south 43 degrees east, along the westerly line of said reservation 350 feet to a bolt driven in the ground; thence south 47 degrees west 520.96 feet to a spike in a willow stump; thence north 40 degrees 58 minutes west 237.19 feet to an iron bolt in the ground; thence north 17 degrees 38 minutes east 151.3 feet along the Fort road to a drill hole in boulder by a willow tree; thence north 41 degrees 10 minutes east along the said road 382.17 feet to the point of beginning.

ELIHU ROOT, *Secretary of War.*

II. The following from the War Department is published for the information and guidance of all concerned:

WAR DEPARTMENT, *Washington, May 11, 1900.*

The following-described lands, comprising twenty-one and one-half acres, more or less, heretofore acquired by purchase at various dates, situate in Camp Elizabeth, in the county of Cumberland and State of Maine, is hereby announced as an addition to the military reservation at Fort Williams, Maine:

Beginning on the northeasterly side of the road known as Cape Cottage or Cape Elizabeth Shore Road at a point where a line drawn southwesterly from the seashore parallel with the northwesterly end of the stone mansion built by the late John Goddard, and running 47 feet distant northwesterly from the dressed stone corner of said end of said mansion intersects said road; thence north 64 degrees 30 minutes east 1,155 feet, more or less, parallel with said northwesterly end of said stone mansion and distant northwesterly 47 feet therefrom, as aforesaid, to low-water mark on the seashore; thence southeasterly by said low-water mark to the north line of the present military reservation; thence south 71 degrees 10 minutes west by the line of said reservation 330 feet, more or less, to a copper bolt in the ledge; thence south 17 degrees 10 minutes west along the line of said reservation 448 feet to a copper bolt set in the ledge; thence south 78 degrees 40 minutes west along the line of said reservation 839.5 feet to a copper bolt set in the ledge; thence on the same course 150.5 feet to said road at the northwest corner of said reservation; thence northerly along said road to the place of beginning.

ELIHU ROOT,
*Secretary of War.*

### GALVESTON, TEX.

In deficiency act, approved February 9, 1900 (General Orders, No. 18, 1900), under head of "Barracks and quarters," from the $1,000,000 therein appropriated for temporary buildings, etc., it is provided "that from the foregoing amount, if in the judgment of the Secretary of War the emergency exists, the sum of $130,000, or so much thereof as in his discretion may be necessary, shall be used for the purchase of a site or sites for the location of barracks for the accommodation of a garrison in charge of fortifications."

On February 21, 1900, the Galveston Land and Improvement Company offered a certain tract in the city of Galveston containing 60 acres more or less, including a house of 10 rooms on the land, also to have certain streets within the tract, containing same 10 acres, vacated for the Government, etc., for $126,000, which offer was accepted by the Secretary of War March 24, 1900; deed executed by said company April 17, 1900; favorable opinion regarding title rendered by Department of Justice, April 30, 1900, and money subsequently paid.

III. The following from the War Department is published for the information and guidance of all concerned (General Orders, No. 91, 1900):

WAR DEPARTMENT, *Washington, July 7, 1900.*

The United States having recently purchased for military purposes about sixty (60) acres of land adjacent to the forty-one and thirty-two one-hundredths (41.32) acres heretofore designated as the military reservation of Fort Crockett, Texas, the same is hereby announced as an addition to said reservation. The boundaries of the entire reservation are announced as follows:

Beginning at the northwest corner of out-lot 203 according to the Galveston City Company's map of the city of Galveston, now in common use, that being the southeast corner of the intersection of Fifty-third street and Avenue U; thence east along the south side of said Avenue U a distance of two thousand nine hundred and sixty (2,960) feet to the northeast corner of out-lot 206, being the southwest corner of the intersection of Forty-fifth street and Avenue U; thence southwardly along the west side of said Forty-fifth street a distance of one thousand two hundred and fifty (1,250) feet to the southeast corner of out-lot 231, being the northwest corner of the intersection of Forty-fifth street and Avenue W; thence continuing southerly on the west line of Forty-fifth street to the waters of the Gulf of Mexico; thence southwesterly along the waters of the Gulf of Mexico with the meanders thereof to the east side of Fifty-third street; thence north along the east side of Fifty-third street to the southwest corner of out-lot 253, that point being the northeast corner of the intersection of Avenue X and Fifty-third street; thence continuing north along the east side of Fifty-third street a distance of one thousand nine hundred and ten (1,910) feet to the place of beginning.

ELIHU ROOT,
*Secretary of War.*

Efforts are now being made to secure land at Fort Mott, Finns Point, N. J., Hawkins Point, Md., Sullivans Island, S. C., and Fort Constitution, N. H.

In connection with the two latter attention is invited to the following provisions of law:

GENERAL ORDERS, No. 77.

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
*Washington, June 2, 1900.*

The following act of Congress is published for the information and government of all concerned:

AN ACT Making appropriations for fortifications and other works of defense, for the armament thereof, for the procurement of heavy ordnance for trial and service, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the sums of money herein provided for be, and the same are hereby, appropriated, out of any moneys in the Treasury not otherwise appropriated, to be available until expended, namely:

FORTIFICATIONS AND OTHER WORKS OF DEFENSE.

* * * * * * *

For the purchase of suitable building sites, and improvements and leases thereon, necessary to properly provide for the garrison at Sullivans Island, Charleston, South Carolina, one hundred and thirty-five thousand dollars, or so much thereof as may be necessary: *Provided,* That no part of this sum shall be expended until valid title to all the land, and improvements and leases thereon, necessary for this purpose shall have been acquired by the United States. * * *

Approved May 25, 1900.

In sundry civil act of June 6, 1900 (General Orders, No. 84, 1900), under head of "Military posts" the following appears: "* * * and for the purchase of suitable building sites for said barracks and quarters, * * * and $30,000, or so much thereof as may be necessary for acquiring by purchase or condemnation the land in the square surrounding Fort Constitution at Newcastle, New Hampshire, to be used for barracks and quarters for troops."

General Orders affecting military reservations issued during the year have been as follows:

General Orders, No. 121, 1899, announces reservation limits of lands near city of Bismarck for post, target range, and sewer purposes.

General Orders, No. 123, 1899, designates new post near Spokane, Wash., as Fort Wright.

General Orders, No. 134, 1899, designates by name certain of new batteries which have been constructed along the seacoast:

Fort Strong, Mass.
Fort Banks, Mass.
Fort Terry, N. Y.
Fort Du Pont, Del.
Fort Pensacola, Fla.
Fort Rosecrans, Cal.
Fort Columbia, Wash.
Fort Casey, Wash.
Fort Armistead, Md.

General Orders, No. 138, 1899, designates by name:

Fort Flagler, Wash.
Fort Michie, Conn.

General Orders, No. 142, 1899, designates limits of reservation at Fort Gibbon, Alaska.

General Orders, No. 147, 1899, designates certain tracts of land set aside for military purposes in Oahu, Hawaiian Islands.

General Orders, No. 162, 1899, announces limits of certain lots recently acquired in connection with Fort Screven, Ga., reservation.

General Orders, No. 163, 1899, transfer of Fort Spokane, Wash., to Interior Department for Indian school purposes.

General Orders, No. 193, 1899, designates limits of Fort Myer, Va., reservation.

General Orders, No. 207, 1899, designates limits of certain lands recently acquired in connection with reservation at Fort Du Pont, Del.

General Orders, No. 213, 1899, designates limits of certain reserved tracts in Honolulu, Kona district, Oahu, Hawaiian Islands.

General Orders, No. 6, 1900, discontinues Fort Bayard, N. Mex., as a garrisoned post and transfers all buildings to the Surgeon-General for establishing a general hospital thereat.

General Orders, No. 8, 1900, creates or designates limits of Department of Alaska, with headquarters at Fort St. Michael.

General Orders, No. 13, 1900, announces reserved limits of so much of peninsula in district of Alaska, embracing Point Spencer, as lies northerly of the southerly boundary.

General Orders, No. 20, 1900, designates new post at Magnolia Bluff, near Seattle, Wash., as Fort Lawton.

General Orders, No. 28, 1900, discontinues Fort Sherman, Idaho, as a garrisoned post, with view to transfer of reservation to Interior Department.

General Orders, No. 43, 1900, designates by new names certain batteries recently constructed along seacoast.

General Orders, No. 44, 1900, publishes Congressional action authorizing erection of buildings on land recently acquired at Fort Du Pont, without waiting for State cession.

General Orders, No. 48, 1900, announces limits of the Eagle City, Alaska, reservation; publishes act for new post at Des Moines, Iowa, upon transfer to United States, without cost, of not less than 400 acres of suitable land, etc.

General Orders, No. 49, 1900, designates new post at Bismarck, N. Dak., as Fort Lincoln.

General Orders, No. 51, 1900, announces limits of additional lands recently purchased in connection with the Fort Columbia, Wash., reservation; announces limits of additional lands recently purchased on North Point, Maryland (Fort Howard); publishes act for new post near Sheridan, Wyo. (Fort Mackenzie), post to contain not less than 1,200 acres of lands belonging to the United States.

General Orders, No. 59, 1900, publishes President's action of April 30, 1900, transferring military reservation of Dry Tortugas, Fla., including Fort Jefferson, to the Navy Department.

General Orders, No. 73, 1900, directs certain corrections in General Orders, No. 43, 1900, and No. 134, 1899, regarding 12-inch battery reservation, Grovers Cliff, Massachusetts; reservation at Napatree Point, Rhode Island; 6-inch battery at Fort Totten, and battery at Santa Rosa Island, Florida.

## CUSTODIANS.

Custodians are employed and paid by the Quartermaster's Department in care of the following reservations:

Madison Barracks, target range, James Fleming, $15 per month.

Old Fort Omaha, O. E. Stearn, $45 per month.

Whipple Barracks, Ariz., A. G. Oliver, $60 per month.

Fort Custer, Mont., H. C. Bullard, $45 per month.

Fort Lincoln, N. Dak., Andrew J. Weide and Abram K. Sleeger, $40 per month each.

Fort Sherman, Idaho, Edward Eaton, $60 per month.

At Fort Townsend, Wash., J. W. Brown; at Fort Davis, Tex., J. L. Janes; at Monterey, Cal., Francis Dowd, serve without money consideration.

*List of military reservations turned over by the War Department to the Interior Department, or otherwise disposed of by the War Department, from 1858 to June 30, 1900, with date of relinquishment, authority therefor, etc.*

| Name of post. | Date of relinquishment. | Authority for relinquishment. | Remarks. |
|---|---|---|---|
| Abercrombie, Fort, Dak | Mar. 25, 1871 | Act Feb. 24, 1871 | Portion east of the Red River of the North. G. O. 19, A. G. O., 1871. |
| Do | July 14, 1880 | Act June 10, 1880 | Reservation abolished. G. O. 55, A. G. O., 1880. |
| Do | | Act July 15, 1882 | Reservation abolished. G. O. 85, A. G. O., 1882. |
| Abraham Lincoln, Fort, N. Dak. | Oct. 15, 1891 | Act July 5, 1884 | 15,040 acres, also Sibleys Island, containing 13,696 acres. G. O. 84, A. G. O., 1891. |
| Arbuckle, Fort, Ind. T | July 9, 1870 | Indian treaty of Apr. 28, 1866. | |
| Assinniboine, Fort, Mont | Oct. 22, 1891 | Act July 5, 1884 | Hay reservation, coal reservation, and part of post reservation. Area not stated. G. O. 85, A. G. O., 1891. |
| Atkinson, Fort, Iowa | | Act June 7, 1860 | 12 Stat., 28. |
| Austin, Tex | | Act Mar. 5, 1888 | Arsenal block. For educational purposes only. G. O. 30, A. G. O., 1888. |
| Baton Rouge Barracks, La | Aug. 22, 1884 | Act July 5, 1884 | 44.17 acres. G. O. 102, A. G. O., 1884. |
| Do | | Act June 12, 1886 | By Secretary Interior to State University. G. O. 55, A. G. O., 1886. |

*List of military reservations turned over by the War Department to the Interior Department, or otherwise disposed of by the War Department, etc.*—Continued.

| Name of post. | Date of relinquishment. | Authority for relinquishment. | Remarks. |
|---|---|---|---|
| Bennett, Fort, S. Dak | | Order of Secretary of War of Oct. 3, 1891, G.O.79, A.G.O., 1891. | On Indian reservation. No formal reservation. |
| Benton, Fort, Mont | Jan. 5, 1883 | Act Aug. 4, 1882 | G. O. 110, A. G. O., 1882. |
| Bidwell, Fort, Cal | Feb. 13, 1885 | Act July 5, 1884 | Portion 123.26 acres. G. O. 16, A. G. O., 1885. |
| Bidwell, Fort, Cal | Nov. 19, 1890 | Act July 5, 1884 | Remainder, 3,090 acres. G. O. 135, A. G. O., 1890. |
| Bois Blanc Island | July 22, 1884 | do | 9,199.43 acres. G. O. 80, A. G. O., 1884. |
| Boise, Fort, Idaho | Sept. 19, 1874 | | Wood and sawmill reservation. Not formally reserved. |
| Do | Apr. 19, 1884 | Act Feb. 14, 1853. Sec. 9, 10 Stat., 1859. | Hay reservation in excess of 640 acres. |
| Bowie, Fort, Ariz | Nov. 14, 1894 | Act July 5, 1884 | 23,040 acres. G. O. 63, 1894. |
| Bragg, Fort, Cal | | Act July 27, 1868 | On Mendocino Indian Reservation. G. O. 74, A. G. O., 1878. |
| Brady, Fort, Mich | Jan. 21, 1878 | Act Mar. 1, 1869 | Not to exceed 1 acre to Baptist Missionary Society. G. O. 25, A. G. O., 1869. |
| Do | | Act Mar. 3, 1875 | Grants 1.26 acres for school purposes. G. O. 41, A. G. O., 1875. |
| Do | Dec. 3, 1894 | Act July 5, 1884 | The lands embraced in fractional sec. 2, T. 47 N., R. 1 W., Michigan meridian, which was reserved from sale for the use of Fort Brady, Mich., by Executive order of Sept. 2, 1847, 3½ acres. G. O. 19, 1895. |
| Bridger, Fort, Wyo | Mar. 25, 1871 | Act Feb. 24, 1871 | Portion 496 square miles. G. O. 19, A. G. O., 1871. |
| Do | Feb. 15, 1872 | do | Modifies G. O. 19, A. G. O., 1871. |
| Do | July 22, 1884 | Act July 5, 1884 | Coal reservation, 99.17 acres. G. O. 80, A. G. O., 1884. |
| Do | Oct. 14, 1890 | do | 10,240 acres. G. O. 123, A. G. O., 1890. |
| Brooke, Fort, Fla | Jan. 4, 1883 | Act Aug. 18, 1856 | 148.11 acres. 11 Stat., p. 87. |
| Buford, Fort, N. Dak | July 30, 1891 | Act July 5, 1884 | Portion. Area not stated. G. O. 68, A. G. O., 1891. |
| Do | Oct. 31, 1895 | do | Remaining portion 444,090 acres. G. O. 58, A. G. O., 1895. |
| Butler, Fort, N. Mex | July 22, 1884 | do | 76,800 acres. G. O. 80, A. G. O., 1884. |
| Cady, Camp, Cal | do | do | 1,562 acres. G. O. 80, A. G. O., 1884. |
| Cameron, Fort, Utah | July 2, 1885 | do | 23,378 acres. War Dept. circular, July 9, 1885. |
| Cantonment, Ind. T | Sept. 7, 1882 | Act July 31, 1882 | For Indian schools. |
| Carlin (near), Nev | Mar. 20, 1888 | Act July 5, 1884 | 920 acres. War Dept. circular, Mar. 26, 1888. |
| Carlisle Barracks, Pa | Dec. 22, 1879 | Order of Secretary of War, Aug. 22, 1879. | About 30 acres. For Indian school purposes until required for military purposes. |
| Cascades, Fort, Wash | Feb. 2, 1867 | | Private claim. |
| Cat Island, Miss | Nov. 1, 1895 | Act July 5, 1884 | Portion. G. O. 58, A. G. O., 1895. |
| Churchill, Fort, Nev | June 15, 1871 | | No formal reservation. |
| Clinch, Fort, Fla | Mar. 23, 1897 | Act July 5, 1884 | Portion. G. O. 21, A. G. O., 1897. |
| Collins, Fort, Dak | July 16, 1872 | Act May 15, 1872 | G. O. 35, A. G. O., 1872. |
| Colville, Fort, Wash | Feb. 26, 1887 | Act July 5, 1884 | 1,070 acres. War Dept. circular, Mar. 1, 1887. |
| Covington, Fort, Md | Jan. —, 1869 | Act June 25, 1868 | G. O. 39, A. G. O., 1868. |
| Cœur d'Alene, Fort, Idaho | Apr. 27, 1886 | Act July 5, 1884 | Winter pasturage. 640 acres. War Dept. circular, May 3, 1886. |
| Council Grove, Okla | Jan. 19, 1895 | do | Military timber reserve for Fort Reno, Okla., 5,760 acres. G. O. 19, 1895. |
| Craig, Fort, N. Mex | Mar. 3, 1885 | do | 24,895 acres. G. O. 21, A. G. O., 1885. |
| Crawford, Fort, Iowa | | Act July 1, 1864 | |
| Crawford, Fort, Colo | July 22, 1884 | Act July 5, 1884 | Portion. G. O. 80, A. G. O., 1884. |
| Do | Dec. 30, 1890 | do | Remainder, 5,472 acres. G. O. 148, A. G. O., 1890. |
| Crawford, Fort, Wis | | Act Mar. 3, 1862 | |
| Crittenden, Fort, Utah | July 22, 1884 | Act July 5, 1884 | 94,550 acres. G. O. 80, A. G. O., 1884. |
| Crittenden, Camp, Ariz | do | do | 3,278.08 acres. G. O. 80, A. G. O., 1884. |
| Crook, Fort, Cal | | Act Feb. 15, 1881 | Act restores to public domain. G. O. 25, A. G. O., 1881. |
| Cummings, Fort, N. Mex | Oct. 20, 1891 | Act July 5, 1884 | 23,040 acres. G. O. 85, A. G. O., 1891. |

*List of military reservations turned over by the War Department to the Interior Department, or otherwise disposed of by the War Department, etc.*—Continued.

| Name of post. | Date of relinquishment. | Authority for relinquishment. | Remarks. |
|---|---|---|---|
| D. A. Russell, Fort, Wyo | | Act Mar. 2, 1895 | 160 acres, State of Wyo. G. O. 13, 1895. |
| Dakota, Fort, Dak | | Act July 14, 1870 | |
| Dalles, Fort, Oreg | Mar. 28, 1877 | Act Mar. 3, 1877 | G. O. 24, 1877. |
| Date Creek, Camp, Oreg | Dec. 7, 1874 | Act June 22, 1874 | G. O. 88, A. G. O., 1874. |
| Del Rio, Tex | | Act May 19, 1896 | Reconveyed to original grantors, The San Felipe Agricultural, Manufacturing and Irrigation Co., 409 acres. |
| Dodge, Fort, Kans | Jan. 12, 1885 | Act July 5, 1884 | 12,000 acres. G. O. 6, A. G. O., 1885. |
| Douglas, Fort, Utah | | Act May 16, 1874 | Not to exceed 20 acres for a public cemetery. G. O. 47, A. G. O., 1874. |
| Do | Apr. 17, 1885 | Act Jan. 21, 1885 (23 Stat., 284). | Portion (151.81 acres) private claim. G. O. 35, A. G. O., 1885. |
| Drum Barracks, Cal | | Act Feb. 25, 1873 | To be reconveyed to Banning and Wilson. |
| Ellis, Fort, Mont | July 26, 1886 | Act July 5, 1884 | 32,116.10 acres. War Dept. circular, July 29, 1886. |
| Elliott, Fort, Tex | Oct. 14, 1890 | do | 2,560 acres. G. O. 123, A. G. O., 1890. |
| El Paso, Tex | Apr. 6, 1894 | Act Mar. 3, 1895 | Old cemetery site, 153,400 square feet. Transferred to city of El Paso for park or other public purposes. G. O. 11, A. G. O., 1894. |
| Fayette, Fort, Pa | | Act May 21, 1890 | Public, No. 125. See Pittsburg. |
| Fetterman, Fort, Wyo | July 22, 1884 | Act July 5, 1884 | 45,085.56 acres. G. O. 80, A. G. O., 1884. |
| Fred Steele, Fort, Wyo | Aug. 9, 1886 | do | 24,833.29 acres. Except cemetery site. War Department circular, Aug. 12, 1886. |
| Galveston, Tex | | Act July 15, 1870 | Lands donated to city. G. O. 100, A. G. O., 1870. |
| Gaston, Fort, Cal | Feb. 11, 1892 | Act July 31, 1882 (22 Stat., 181). | 451.5 acres. No general order. Letter of Secretary of War of Feb. 11, 1892. See G. O. 14, A. G. O., 1892. |
| Gibson, Fort, Ind. T | Feb. 7, 1891 | Act July 5, 1884 | 5,541 acres. National cemetery excepted. G. O. 15, A. G. O., 1891. |
| Goodwin, Camp, Ariz | July 22, 1884 | do | 5,760 acres. G. O. 80, A. G. O., 1884. |
| Grant (old), Camp, Ariz | do | do | 2,031.70 acres. G. O. 80, A. G. O., 1884. |
| Green, Fort, R. I | | Act Feb. 23, 1887 | To city of Newport as a public park. G. O. 25, A. G. O., 1887. |
| Gratiot, Fort, Mich | Nov. 9, 1880 | Act July 20, 1868 | Portion. G. O. 60, A. G. O., 1868. |
| Do | | Act Mar. 18, 1870. Amends act July 20, 1868. | 20.9 acres. G. O. 49, A. G. O., 1870. |
| Do | | Act Mar. 3, 1873 | Cemetery grounds. G. O. 45, A. G. O., 1873. |
| Do | | Act June 16, 1880 | Remainder. G. O. 55, A. G. O., 1880. |
| Greenwood Island, Miss | Dec. 26, 1890 | Act July 5, 1884 | 100 acres. G. O. 147, A. G. O., 1890. |
| Hall, Fort, Idaho | Apr. 26, 1883 | Act July 31, 1882 | For Indian schools. |
| Halleck, Fort, Nev | Oct. 11, 1886 | Act July 5, 1884 | 10,900.93 acres. War Department circular, Oct. 28, 1886. |
| Hamer, Fort, Fla | Feb. 26, 1876 | Act Aug. 18, 1856 | |
| Hancock Barracks, Me | | Act Mar. 14, 1872 | Sale authorized. |
| Hancock, Fort, Tex | Nov. 1, 1895 | Act July 5, 1884 | 468 acres. G. O. 58, A. G. O., 1895. |
| Harker, Fort, Kans | July 12, 1880 | Act June 15, 1880 | G. O. 55, A. G. O., 1880. |
| Hartsuff, Fort, Nebr | July 22, 1884 | Act July 5, 1884 | 3,251.41 acres. G. O. 80, A. G. O., 1884. |
| Hays, Fort, Kans | May 13, 1886 | Act June 11, 1884 | Portion, not to exceed 165 acres. G. O. 53, A. G. O., 1884. |
| Do | Nov. 2, 1889 | Act July 5, 1884 | Remainder, 7,600 acres. G. O. 81, A. G. O., 1889. |
| Horn Island, Miss | Nov. 1, 1895 | do | Portion. G. O., 58, A. G. O., 1895. |
| Hoskins, Fort, Oreg | Feb. 16, 1891 | | No formal reservation. |
| Hot Springs, Ark | Aug. 27, 1890 | Act July 5, 1884 | All of square or block 94. G. O. 96, A. G. O., 1890. |
| Houston, Fort, Tex | | Act June 23, 1874 | Donated to Fisk University for educational purposes. G. O., 86, A. G. O., 1874. |
| Howard, Fort, Wis | | Act Mar. 3, 1863 | Portion. |
| Do | | Act July 4, 1866 | Remainder. |
| Hualpai, Fort Ariz | Apr. 22, 1874 | | No formal reservation. |
| Humboldt, Fort, Cal | Apr. 6, 1870 | | Do. |

*List of military reservations turned over by the War Department to the Interior Department, or otherwise disposed of by the War Department, etc.*—Continued.

| Name of post. | Date of relinquishment. | Authority for relinquishment. | Remarks. |
|---|---|---|---|
| Independence, Camp, Cal | July 22, 1884 | Act July 5, 1884 | 5,210.38 acres. G. O. 80, A. G. O., 1884. |
| Jesup, Fort, La | Mar. 25, 1871 | Act Feb. 24, 1871 | G. O. 19, A. G. O., 1871. |
| Jones, Fort, Cal | May 27, 1870 | | No formal reservation. |
| Jupiter, Fort, Fla | Mar. 16, 1880 | Act Aug. 18, 1856 (11 Stat., 87). | 9,088.38 acres. Except lighthouse lot. |
| Kearney, Fort (old), Iowa | | Act Apr. 15, 1874 | |
| Kearney, Fort, Nebr | Dec. 2, 1876 | Act July 21, 1876 | G. O. 111, A. G. O., 1876. |
| Keogh, Fort, Mont | | Act July 30, 1890 (Public, 218). | Portion east of Tongue River. |
| Key, Biscaine, Fla | July 9, 1870 | Act Aug. 18, 1856 | |
| Klamath, Fort, Oreg | May 4, 1886 | Act July 5, 1884 | 3,335.68 acres. War Department circular, May 6, 1886. |
| Lane, Fort, Oreg | Mar. 25, 1871 | Act Feb. 24, 1871 | G. O. 19, A. G. O., 1871. |
| Lapwai, Fort, Idaho | June 5, 1882 | Act July 31, 1882 | Post reserve for Indian schools. |
| Do | May 7, 1884 | Act Feb. 14, 1853 (10 Stat., 159). | Hay reservation in excess of 640 acres. |
| Laramie, Fort, Wyo | | Act Aug. 14, 1876 | Restores a portion to public domain. G. O. 90, A. G. O., 1876. |
| Do | June 9, 1890 | Act July 5, 1884 | G. O. 60, A. G. O., 1890. |
| Do | Nov. 4, 1897 | do | Wood and timber reserve; 39,680 acres. G. O. 61, A. G. O., 1897. |
| Larned, Fort, Kans | Mar. 26, 1883 | Act Aug. 4, 1882 | G. O. 110, A. G. O., 1882. |
| Leavenworth, Fort, Kans | Dec. 23, 1868 | Act July 2, 1868 | Sale of 20 acres in southeast corner to Leavenworth Coal Co. |
| Do | | Act Feb. 9, 1871 | Sale of 128.82 acres to Kansas Agricultural and Mechanical Association. G. O. 14, A. G. O., 1871. |
| Do | | Act Mar. 2, 1889 | Lease of 9.75 acres to Leavenworth Water Co. while lands are used as a military site. G. O. 39, A. G. O., 1889. |
| Leavenworth Prison, Kans | Mar. 2, 1895 | Act Mar. 2, 1895 | Buildings and grounds transferred to Department of Justice. For reservation limits see G. O. 19, 1895. |
| Lewis, Fort, Colo | Nov. 12, 1891 | Act July 31, 1882 (22 Stat., 181). | 30,336 acres. G. O. 89, A. G. O., 1891. |
| Do | Feb. 16, 1895 | Act July 5, 1894 | G. O. 19, 1895. |
| Little Rock Barracks, Ark | Oct. 14, 1890 | Act July 5, 1884 | 36.01 acres. G. O. 123, A. G. O., 1890. Act Apr. 23, 1892, transfers to city of Little Rock. |
| Logan, Fort, Mont | June 4, 1881 | Act May 8, 1880 | Sale at auction. G. O. 38, A. G. O., 1880. |
| Louisiana, State of[1] | Sept. 28, 1886 | Act July 5, 1880 | 6,170.79 acres. War Department circular, Sept. 28, 1886. |
| Lowell, Fort, Ariz | Mar. 5, 1891 | Act July 5, 1884 | Area not stated. G. O. 24, A. G. O., 1891. |
| Lyon, Fort (old), Colo | July 22, 1884 | do | 38,000 acres. G. O. 80, A. G. O., 1884. |
| Lyon, Fort, Colo | Dec. 2, 1889 | do | 5,874 acres. G. O. 9, A. G. O., 1890. |
| Mackinac, Fort, Mich | | Act March 1, 1879 | Portion to Wendell, Van Allen & Bailey. G. O. 19, 1879. |
| Mackinac, Fort, Mich., and National Park. | Aug. 3, 1895 | Act March 2, 1895 | Reservation 103.41 acres. Park 821 acres; transferred to State of Michigan. G. O. 13, 1895, and G. O. 49, A. G. O., 1895. |
| Macomb, Fort, La | June 26, 1896 | Act July 5, 1884 | Portion. G. O. 26, A. G. O., 1896. |
| Marcy, Fort, N. Mex | June 28, 1895 | do | 17 acres, 3,425 square yards, 2,656 square feet. G. O. 40, 1895. |
| McDermit, Fort, Nev | Dec. 1, 1886 | do | Hay reservation, 6,400 acres, War Department circular, Dec. 3, 1886. |
| Do | July 24, 1889 | do | Post reserve, 3,974.40 acres. G. O. 67, A. G. O., 1889. |
| McGarry, Camp, Nev | Mar. 25, 1871 | Act Feb. 24, 1871 | G. O. 19, A. G. O., 1871. |
| McDowell, Fort, Ariz | Oct. 1, 1890 | Act July 31, 1882 (22 Stat., 181). | Post, buildings, etc., for Indian school purposes until required for military purposes. G. O. 115, A. G. O., 1890. |
| Do | Mar. 2, 1891 | Act July 5, 1884 | Containing 25,628 acres. G. O. 22, A. G. O., 1891. |
| McHenry, Fort, Md | | Act June 19, 1878 | Site for a dry dock to Baltimore Dry Dock Co. G. O. 44, A. G. O., 1878. |

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[1] Ten reservations on the Gulf coast, as follows: One near the eastern mouth of Bayou Lafourche; one near western mouth of Bayou Lafourche; one on Bayou Plat; one near western entrance to Caminada Bay; one near the pass at the eastern end of Grand Terre Island; one near the mouth of Quatre Bayou Pass; one at Bastian Bay; three near Bastian Bay.

*List of military reservations turned over by the War Department to the Interior Department, or otherwise disposed of by the War Department, etc.*—Continued.

| Name of post. | Date of relinquishment. | Authority for relinquishment. | Remarks. |
|---|---|---|---|
| McKinney, Fort, Wyo | Jan. 16, 1889 | Act July 5, 1884 | Portion, estimated, 640 acres. G. O. 5, A. G. O., 1889. |
| Do | Nov. 14, 1894 | do | Military reserve, 24,960 acres. G. O. 63, 1894. |
| McKinney Depot, Wyo | Dec. 7, 1894 | do | Camp and grazing reserve, 640 acres. G. O. 19, 1895. |
| McPherson, Fort, Nebr | Jan. 5, 1887 | do | 19,500 acres. All except national cemetery tract. War Department circular, Jan. 10, 1887. |
| McRae, Fort, N. Mex | July 22, 1884 | do | 2,560 acres. G. O. 80, A. G. O., 1884. |
| Mackinac, Fort, Mich | | Act Mar. 1, 1879 | Portion to Messrs. Wendell, Van Allen & Bailey. G. O. 19, A. G. O., 1879. |
| Maginnis, Fort, Mont | Aug. 14, 1890 | Act July 5, 1884 | 31,059.21 acres. G. O. 91, A. G. O., 1890. |
| Mason, Fort (Point San Jose), Cal. | | Act July 1, 1870 | Portion to the city and county of San Francisco, Cal. G. O. 87, A. G. O., 1870. |
| Missouri River, island in, Mo. | July 22, 1884 | Act July 5, 1884 | G. O. 80, A. G. O., 1884. |
| Mojave, Fort, Ariz | Sept. 29, 1890 | Act July 31, 1882 (22 Stat., 181). | 14,697 acres. Indian school purposes until required for military occupation. G. O. 111, A. G. O., 1890. |
| Mount Vernon Barracks, Ala. | Mar. 2, 1893 | Letter of Secretary of War of Mar. 2, 1893. | All that portion south of Cedar Creek. |
| Do | Mar. 10, 1895 | Act Mar. 1, 1895 | To State of Alabama for public purposes. G. O. 38, 1895. |
| Narrows of Puget Sound, Wash. | Nov. 14, 1894 | Act July 5, 1884 | 582.1 acres on west side of Narrows at south side of entrance of Gig Harbor. G. O. 63., 1894. |
| Do | do | do | 637.4 acres on west side of Narrows. G. O. 63, 1894. |
| Do | do | do | 635 acres on west side of Narrows south of Point Evans. G. O. 63, 1894. |
| Do | do | do | 559.33 acres on north side of Gig Harbor. G. O. 63, 1894. |
| Newport Barracks, Ky | Jan. 1, 1895 | Act July 31, 1894 | To city of Newport for park purposes. |
| Niobrara, Fort, Nebr | May 9, 1896 | Act July 5, 1884 | Portion. 720 acres. G. O. 19, A. G. O., 1896. |
| Oglethorpe Barracks, Ga | Apr. 7, 1884 | Act Apr. 7, 1882 | G. O. 46, A. G. O., 1882. |
| Oklahoma, Okla | Oct. 4, 1892 | Act July 5, 1884 | 160 acres. G. O. 69, A. G. O., 1892. |
| Pagosa Springs (old Fort Lewis, Colo.). | July 22, 1884 | do | 21,838.08 acres. G. O. 80, A. G. O., 1884. |
| Pembina Fort, N. Dak | Dec. 2, 1895 | do | 1,920 acres. G. O. 60, A. G. O., 1895. |
| Petit Bois Blanc Island, Miss. | Nov. 1, 1895 | do | Portion. G. O. 58, A. G. O., 1895. |
| Pikes Peak, Colo | Jan. 16, 1889 | do | 8,192 acres. G. O. No. 5 of 1889. |
| Pittsburg, Pa | Nov. 8, 1894 | Act May 21, 1890 | Certain land corner Penn ave. and Garrison alley; sold to Charles McKnight. |
| Plattsburg Barracks, N. Y | | Act June 8, 1872. | 25 acres to the New York and Canada R. R. Co. G. O. 66, A. G. O., 1872. |
| Do | | Act June 30, 1879 | 2 acres, etc., to R. R. Co. G. O. 70, A. G. O., 1879. |
| Point Roberts, Wash | Sept. 23, 1890 | Act July 5, 1884 | 1,472 acres. G. O. 107, A. G. O., 1890. |
| Presidio of San Francisco, Cal. | | Act May 9, 1876 | Portion to city of San Francisco. G. O. 44, A. G. O., 1876. |
| Randall, Fort, Dak | | Act May 18, 1874 | Portion. G. O. 47, A. G. O., 1874. |
| Do | July 22, 1884 | Act July 5, 1884 | Portion (24,503.53 acres north of Missouri River) not already transferred under act of May 18, 1874. G. O. 80. A. G. O., 1884. |
| Do | | Act Oct. 1, 1890 (Public, 343). | Portion open to settlers. |
| Do | Oct. 20, 1893 | Act July 5, 1884 | Remainder, 92,160 acres, G. O. 84, 1893. |
| Ransom, Fort, N. Dak | July 14, 1880 | Act June 10, 1880 | G. O. 55, A. G. O., 1880. |
| Reading, Fort, Cal | | Act Feb. 15, 1881 | Restored to public domain. G. O. 25, A. G. O., 1881. |
| Reno, Fort, Okla | | | See Council Grove. |
| Reynolds, Fort, Colo | July 18, 1874 | Act June 19, 1874 | G. O. 88, A. G. O., 1874. |
| Rice, Fort, S. Dak | July 22, 1884 | Act July 5, 1884 | Estimated at 102,400 acres. G. O. 80, A. G. O., 1884. |
| Ridgeley, Fort, Minn | | Act July 1, 1870 | G. O. 87, A. G. O., 1870. |

*List of military reservations turned over by the War Department to the Interior Department, or otherwise disposed of by the War Department, etc.*—Continued.

| Name of post. | Date of relinquishment. | Authority for relinquishment. | Remarks. |
|---|---|---|---|
| Riley, Fort, Kans |  | Joint resolution, Mar. 2, 1867. | Reduced area, etc. G. O. 29, A. G. O., 1867. |
| Ripley, Fort, Minn |  | Act Feb. 28, 1873 | Portion. G. O. 28, A. G. O., 1873. |
| Do | July 2, 1880 | Act Apr. 1, 1880 | Restored to public domain. G. O. 22, A. G. O., 1880. |
| Round Island, Miss | Nov. 1, 1895 | Act July 5, 1884 | G. O. 58, A. G. O., 1895. |
| Robinson, Fort, Nebr | Sept. 22, 1896 | do | Portion. G. O. 44, A. G. O., 1896. |
| Rush Lake Valley, Utah | July 22, 1884 | do | 5,131.47 acres. G. O. 80, A. G. O., 1884. |
| Sabine, Fort, La | Mar. 25, 1871 | Act Feb. 24, 1871 | G. O. 19, A. G. O., 1871. |
| St. Augustine, Fla | Oct. 15, 1883 | Act Aug. 18, 1856 (11 Stat., 88). | 0.1619 and 0.12786 acre. Hospital lot and blacksmith's shop lot. |
| Do | Mar. 18, 1886 | Act July 5, 1884 | Old powder-house lot or governor's garden lot, 10.29 acres. |
| Do | Nov. 18, 1886 | do | *Dragoon* barracks lot, 1.15 acres. War Department circular, Nov. 20, 1886. |
| St. Marks, Fla | Oct. 27, 1892 | do | 50 acres. G. O. 74, A. G. O., 1892. |
| St. Michael, Alaska | Apr. 17, 1899 | do | Certain portion. G. O. 77, A. G. O., 1899. |
| Sanders, Fort, Wyo |  | Act June 9, 1874 | Reduced area. G. O. 60, A. G. O., 1874. |
| Do | Aug. 22, 1884 | Act July 5, 1884 | 19,342 acres. G. O. 102, A. G. O., 1884. |
| Sedgwick, Fort, Colo. and Nebr. | July 22, 1884 | do | 40,960 acres. G. O. 80, 1884. |
| Selden, Fort, N. Mex | Apr. 9, 1890 | Act July 31, 1882 (22 Stat., 181). | G. O. 44, A. G. O., 1890. |
| Do | Mar. 30, 1892 | Act July 5, 1884 | 9,613.7381 acres. G. O. 26, A. G. O., 1892. |
| Seward, Fort, Dak | July 14, 1880 | Act June 10, 1880 | G. O. 55, A. G. O., 1880. |
| Shaw, Fort, Mont | Apr. 30, 1892 | Act July 31, 1882 (22 Stat., 181). | 29,843 acres. G. O. 30, A. G. O., 1892. |
| Sheridan, Camp, Nebr | July 22, 1884 | Act July 5, 1884 | 18,225 acres. G. O. 80, A. G. O., 1884. |
| Sidney, Fort, Nebr | Nov. 14, 1894 | Act July 5, 1894 | 620 acres military reserve; 20 acres on NE. corner donated by act of June 10, 1892, to city of Sidney, Nebr,, for cemetery purposes. G. O. 63, 1894.<br>3,195 acres wood and timber reserve. G. O. 63, 1894. |
| Smith, Fort, Ark | Mar. 21, 1871 | Act Feb. 24, 1871 | G. O. 19, A. G. O., 1871. |
| Sisseton, Fort, Dak | Apr. 22, 1889 | Act July 5, 1884 | 81,920 acres. War Department circular, May 1, 1889. |
| Snelling, Fort, Minn | Dec. 23, 1873 | Act May 7, 1870 | Reduced to 1,531.21 acres. G. O. 66, A. G. O., 1870. |
| Soldiers, Key, Fla | July 9, 1870 | Act Aug. 18, 1856. |  |
| Stambaugh, Camp, Wyo | May 3, 1881 |  | No formal reservation. |
| Stanton, Fort, N. Mex | Aug. 7, 1872 | Act May 21, 1872 | Reduces reservation. G. O. 35, A. G. O., 1872. |
| Do | Aug. 17, 1896 | Act July 5, 1884 | 10,240 acres. G. O. 3, A. G. O., 1896. |
| Spokane, Fort (old), Wash | Aug. 28, 1899 | Act July 31, 1882 | To Interior Department for Indian school purposes. G. O. 163, 1899. |
| Steilacoom, Fort, Wash |  | Act Apr. 15, 1874 | Donates portion to Washington for use of insane asylum. G. O. 32, A. G. O., 1874. |
| Do | July 22, 1884 | Act July 5, 1884 | 289 acres. G. O. 80, A. G. O., 1884. |
| Stevenson, Fort, Dak | Feb. 13, 1895 | do | G. O. 19, 1895. |
| Sullivan, Fort, Me | July 22, 1884 | do | 12.5 acres. G. O. 80, A. G. O., 1884. |
| Summer, Fort, N. Mex | Mar. 25, 1871 | Act Feb. 24, 1871 | Except national cemetery. G. O. 19, A. G. O., 1871. |
| Sulphur Creek, Wyo | July 22, 1884 | Act July 5, 1884 | Coal reservation. G. O. 80, A. G. O., 1884. |
| Sully, Fort, S. Dak | Nov. 14, 1894 | do | 25,984 acres. G. O. 63, 1894. |
| Supply, Fort, Okla | do | do | 40,320 acres. G. O. 63, 1894. |
| Sucia Island, Wash | Dec. 18, 1896 | do | Portion to Interior Department. G. O. 52, A. G. O., 1896. |
| Thornburg, Fort, Utah | Nov. 14, 1884 | do | 21,851 acres. G. O. 80, A. G. O., 1884. |
| Thomas, Fort, Ariz | Dec. 2, 1892 | do | 10,487 acres. G. O. 81, A. G. O., 1892. |
| Three Forks, Owyhee, Camp, Idaho. | July 22, 1884 | do | 4,800 acres. G. O. 80, A. G. O., 1884. |
| Totten, Fort, Dak | Oct. 1, 1890 | Act July 31, 1882 (22 Stat., 181). | Post, buildings, etc., for Indian school purposes until required for military purposes. G. O. 115, A. G. O., 1890. |

*List of military reservations turned over by the War Department to the Interior Department, or otherwise disposed of by the War Department, etc.*—Continued.

| Name of post. | Date of relinquishment. | Authority for relinquishment. | Remarks. |
|---|---|---|---|
| Union, Fort, N. Mex | Apr. 1, 1894 | Sec. of War, Feb. 16, 1894. | Private property. Buildings and grounds totally abandoned by U. S. |
| Uncompahgre, Cantonment, on Colorado. | July 22, 1884 | Act July 5, 1884 | Portion, 4,000 acres. G. O. 80, A. G. O., 1884. |
| Verde, Fort, Ariz | do | do | Garden tract, 3,000 acres. G. O. 80, A. G. O., 1884. |
| Do | Oct. 14, 1890 | do | 9,293.79 acres. G. O. 123, A. G. O., 1890. |
| Wallace, Fort Kans | July 22, 1884 | do | 8,926.09 acres. G. O. 80, A. G. O., 1884. |
| Walla Walla, Fort, Wash | Oct. 26, 1875 | Act Apr. 29, 1872 | Portion of hay reserve. G. O. 35, A. G. O., 1872. |
| Do | May 3, 1880 | Act June 8, 1872 | Remainder of hay reserve. |
| Do | Oct. 26, 1875 | do | Timber reserve. G. O. 66, A. G. O., 1872. |
| Do | May 3, 1880 | do | Portion of post reservation. |
| Wallen, Camp, Ariz | Apr. 22, 1874 | | No formal reservation. |
| Washita, Fort, Ind. T | July 1, 1870 | | Do. |
| Waterford, Pa | | Act Mar. 4, 1868 | |
| Wayne, Fort, Ark | Mar. 26, 1871 | Act Feb. 24, 1871 | G. O. 19, A. G. O., 1871. |
| Whipple Barracks, Ariz | Oct. 21, 1875 | Act June 22, 1874 | Portion. G. O. 88, A. G. O., 1874. |
| Do | July 22, 1884 | Act July 5, 1884 | Timber reserve, 720 acres. G. O. 80, A. G. O., 1884. |
| White River, Camp, on Colorado. | do | do | 10,960 acres. G. O. 80, A. G. O., 1884. |
| Wilkins, Fort, Mich | do | do | 148.35 acres. G. O. 80, A. G. O., 1884. |
| Willow Grove, Camp, Ariz | Apr. 22, 1874 | | No formal reservation. |
| Wilmington Depot, Cal | | Act Feb. 25, 1873 | To be reconveyed to Banning and Wilson. G. O. 45, A. G. O., 1875. |
| Yuma, Fort, Ariz | Dec. 7, 1874 | Act June 22, 1874 | Portion. G. O. 88, A. G. O., 1874. |
| Yuma, Fort, Ariz. and Cal | Jan. 9, 1884 | | Indian school purposes. |
| Do | July 22, 1884 | Act July 5, 1884 | G. O. 80, A. G. O., 1884. |
| Zarah, Fort, Kans | Mar. 25, 1871 | Act Feb. 24, 1871 | G. O. 19, A. G. O., 1871. |

## MANILA.

Among the many stores and supplies furnished for troops serving in the Philippines, mention may be made of the following:

On urgent cable call from the chief quartermaster there were gathered from various points and shipped to Manila 9 odorless wagons, 198 closet troughs, and 188 urinal troughs, the approximated valuation of which, including certain spare parts also supplied, being $14,838.50.

## DISTILLING PLANTS.

Three large and six small plants have also been supplied at cost of $16,700.

### DESCRIPTION.

Large (capacity, each 3,800 gallons per day, 24 hours):
  3 distillers.
  6 25-horsepower boilers.
  3 (each) feed and circulating pumps.
  Storage tanks, filter tanks.
  Piping and fittings complete.
Small:
  Capacity, 600 gallons each 24 hours.
  Including with each plant, boiler, feed pump.
  Water-supply pump with 150 feet suction hose.
  Water-supply tank, 2 filters, 1 sponge filter, condensing and purifying apparatus.
  400-gallon storage tank, etc.

### SMITH CREMATORS.

Four of these cremators, which are designed for use in tropical climates as a sanitary measure to abolish the camp sink and to quickly destroy garbage and other refuse, have also been purchased and shipped, the expense thereof being met from island funds.

### WATERHOUSE-FORBES WATER STERILIZER.

This apparatus was examined by a board of officers in 1898, who found it of superior merit and that it was well adapted for abundant supply of sterile water to troops serving in the field; that the sample examined contained two heat exchanges and had a capacity of not less than 300 gallons of sterilized water per twelve hours, at a difference of only 4½° F. between the nonsterilized and the sterilized water, and was thought to be the size most suitable for issue.

They believed it to be capable of supplying a sufficiency of pure water for two companies serving in the field.

If in permanent camp and with the opportunity of accumulating a supply of sterilized water, it is believed one such apparatus would be equal to the need of a battalion.

Based thereupon, and on recommendation of the Surgeon-General, the Secretary of War, in August, 1899, authorized supply of 100 thereof for use of troops serving in the Philippines, at approximate cost of $10,000.

In April, 1900, this company submitted an improved model, which was also examined by the Medical Department.

This was also found to have much merit. Average capacity 21.66 gallons, capable of increase to 30 gallons per hour; difference in temperature between the inflowing and outflowing stream, 16° F. Weight reduced to less than 100 pounds, properly boxed; previous model weighing 125 pounds.

Based on cable call of department authorities, the Secretary of War authorized, in April last, purchase and shipment of 200 of this latter pattern, subject to some slight modifications, at a cost of $20,000, approximately.

### FILTERS.

One hundred and thirty-two Pasteur field, 82 Berkefeld, and 101 Maignen filters have been supplied.

### MISCELLANEOUS.

Various quantities of tools, pipe, fittings, hose, closets, etc., have been supplied, in connection with repair and maintenance of the water and sewer systems.

### REFRIGERATING PLANT.

The work in connection with this large and expensive plant, a brief description of which will be found on page 169, Quartermaster-General's Report for 1899, after many troublesome and unavoidable delays, is now, from latest reports received, well under way, and its completion is expected by February next, entire expense being borne from island funds.

## ICE MACHINES.

November 6, 1900, General Otis was directed from War Department to provide the subsistence department with cold storage at Iloilo, Jolo, and Cebu, to be paid for from Philippine funds.

In connection with above, Secretary of War in January last authorized Quartermaster's Department to provide shelter for the ice machinery at Cebu at cost of $3,000, expense to be charged to island funds.

## ALASKA.

Among the various articles supplied for troops serving in Alaska, mention may be made of two distilling plants of guaranteed capacity of 1,200 gallons potable water every twenty-four hours, at cost of $4,730, together with various spare parts, each plant being complete, with distiller, evaporator, circulating pump, feed pump, portable boiler, firing tools, smokestack, etc. Various quantities of pipe, fittings, tools, pumps, hose, packing, water and ash barrels have also been furnished, as also—

12 Pasteur field filters.
12 Maignen and Berkefeld filters.
24 ladders.
24 hand pumps.
15 Underwriters' extinguishers.
30 Johnson force pumps.
100 Kilfyre extinguishers.

## CHINA.

Since close of fiscal year mention may be made of the sending forward for use of troops serving in China of 50 Waterhouse-Forbes water sterilizers, the approximate cost of which was $5,000; also 6 small distilling plants of 600 gallons capacity each per twenty-four hours, at approximate cost of $11,000.

Each plant consisted of boiler, feed and supply pump, suction hose, supply and storage tank, 2 filters, 1 storage filter, condensing and pumping appurtenances, etc.

A large distilling plant of 3,800 gallons per day capacity with various spare parts has also been sent forward for use in China if needed.

If not so required, then it is to be used for troops serving in the Philippines.

## ARTESIAN WELLS.

Authority has been given during the year for the sinking of deep wells at the following points:

Fort Carroll, Md.
Fort Crook, Nebr.
Fort Caswell, N. C.
Fort Du Pont, Del.
Fort Flagler, Wash.
Fort Greble, R. I.
Fort Hunt, Va.
Hawkins Point, Va.
Jefferson Barracks, Mo.
Fort Mott, N. J.
Fort Pickens, Fla.
Fort Stevens, Oreg.
Fort Terry, N. Y.
Fort Washington, Md.
Fort Dade, Fla.
Fort De Soto, Fla.
Fort Howard, Md.

Some of these have proved a success, some otherwise, while work on others is now in progress.

The calls from the various military posts throughout the country for water, sewer, plumbing, lighting, and heating improvements and repairs have been voluminous, and total of the various estimates extremely heavy.

While the funds of the Department have not been sufficient to meet all these demands, all reasonable and absolute requirements, after careful study and consideration, have been fully and promptly met.

The various expenditures made through this branch of the office will be found of record among the tables and totals given in report of the construction and repair division, to which attention is invited.

Respectfully,

F. G. Hodgson,
*Major and Quartermaster, U. S. V.*

The Quartermaster-General,
*Washington, D. C.*

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War Department,
Quartermaster-General's Office,
*Washington, August 15, 1900.*

General: I have the honor to submit a report of the operations of the inspection branch of this office for the fiscal year ended June 30, 1900.

The work under my supervision consists mainly of such matters as relate to the personnel of the quartermaster's department. This includes the officers of the department, both regular and volunteer; the post quartermaster-sergeants; the detachment of army-service men at Westpoint, N. Y.; the civilian employees of this office, and of the quartermaster's department-at-large, which embraces those governed by the civil service rules.

### OFFICERS OF THE QUARTERMASTER'S DEPARTMENT.

Under existing law the number of officers provided for this department is as follows:

| | | |
|---|---|---|
| Regular establishment: | | |
| Quartermaster-general, with rank of brigadier-general | 1 | |
| Assistant quartermasters-general, with rank of colonel | 4 | |
| Deputy quartermasters-general, with rank of lieutenant-colonel | 8 | |
| Quartermasters, with rank of major | 14 | |
| Assistant quartermasters, with rank of captain | 30 | |
| Military storekeeper, with rank of captain | 1 | |
| | | 58 |
| Volunteers: | | |
| Quartermasters, with rank of major | 30 | |
| Assistant quartermasters, with rank of captain | 40 | |
| | | 70 |
| Total, regulars and volunteers | | 128 |

It is provided in section 14 of the act approved March 2, 1899—

> That for each Regular Army officer of a staff, corps, or department, who may be retained in or appointed to a higher volunteer rank in said staff, corps, or department than that actually held by him in the regular establishment, there may be appointed one officer of volunteers of the lowest grade mentioned in this section for such staff corps or department, but no appointment shall be made which will increase the total number of officers, regular and volunteer, serving in any grade, above the number authorized by this act.

Under the authority of the above-mentioned law, 18 captains and assistant quartermasters of volunteers are now in service, occupying the places temporarily vacated by the same number of captains of the regular establishment, who have been given higher volunteer rank.

Of the 30 majors and quartermasters of volunteers now in the service, 18 were appointed from captains and assistant quartermasters of the Regular Army, 6 from officers of the line of the Regular Army, and 6 from civil life.

Of the 68 volunteer captains and assistant quartermasters in service, 14 were appointed from lieutenants of the line of the Regular Army and 44 from civil life and from volunteer organizations.

A full list showing all the officers serving in this department on August 15, 1900, giving their rank and station; and also a list giving the names of the volunteer quartermasters honorably discharged from the service since August 14, 1899, the date of my last statement, is submitted with this report.

At this date, August 15, 1900, the 128 officers of this department are distributed for duty as follows:

| | |
|---|---|
| In service in Alaska | 1 |
| In service in, and under orders for China | 7 |
| In service in Cuba | 13 |
| In service in Honolulu | 1 |
| In service in Japan | 1 |
| In service in Philippine Islands | 25 |
| In service in Porto Rico | 2 |
| In service at the general and sub-depots, in the 9 military departments, on construction duty at military posts within the United States, and on duty in the office of the Quartermaster-General | 49 |
| In service in the transport service | 21 |
| On leave, sick, and detached | 6 |
| Unassigned | 1 |
| Vacancy | 1 |
| Total | 128 |

Since the date of my last report, this department has suffered the loss of another of its efficient officers, Maj. Guy Howard, quartermaster, U. S. Volunteers (captain and assistant quartermaster, U. S. Army), who was killed by the Philippine insurgents on October 22, 1899, while in the discharge of his duties in the Philippines. His remains were brought home and laid at rest with military honors.

## POST QUARTERMASTER-SERGEANTS.

The present law limits the number of post quartermaster-sergeants to 105. This number is now in service and are distributed where they are most urgently needed. Many requests from military posts and stations for the services of these sergeants had to be denied during the past fiscal year by reason of the limited number available. It would surely be in the interest of the public service if Congress, at its next session, would authorize 150 of such sergeants in lieu of the present inadequate number, and I earnestly recommend that such action be taken as will accomplish that result.

### DETACHMENT OF ARMY SERVICE MEN, QUARTERMASTER'S DEPARTMENT, WESTPOINT, N. Y.

Maj. John B. Bellinger, quartermaster, U. S. Volunteers, commanding this detachment, reports in connection therewith as follows:

| | |
|---|---|
| Number of men in detachment July 1, 1899 | 139 |
| Number of men transferred or discharged during fiscal year ended June 30, 1900 | 38 |
| | 101 |
| Number of men enlisted in and transferred to detachment during fiscal year ended June 30, 1900 | 38 |
| Number of vacancies June 30, 1900 | 2 |
| Total | 141 |

Major Bellinger, commanding said detachment, states that all the members thereof performed their work efficiently and faithfully during the past fiscal year.

### CIVILIAN EMPLOYEES, QUARTERMASTER'S DEPARTMENT-AT-LARGE.

During the past fiscal year the force of civilian employees hired by the Quartermaster's Department was given the most critical examination, and such reductions made as to bring the number within the limits of the actual requirements of the service. Great care was exercised in selecting from the war emergency clerks and others holding temporary positions in the Quartermaster's Department-at-Large those to be retained in service and classified under the President's amendment of May 29, 1899, of the civil-service rules. The most efficient and best qualified of these employees, as shown by their two or more years of temporary service, were listed for retention and classification. This list, containing the names of 298 persons, was submitted to the honorable the Secretary of War and was approved by him on June 1, 1900, and later transmitted to the Civil Service Commission. These employees, therefore, were on that date added to the classified force of this department and made subject to the same civil-service rules as govern the other classified employees of the Quartermaster's Department-at-Large.

Under the act approved February 24, 1900, the following provision of law relating to civilian employees of the Quartermaster's Department was continued suspended until June 30, 1901, viz:

> *Provided*, That not more than one million dollars of the sums appropriated by this act shall be paid out for the services of civilian employees in the Quartermaster's Department, including those heretofore paid out of the funds appropriated for regular supplies, incidental expenses, barracks and quarters, army transportation, clothing, camp and garrison equipage; that no employee paid therefrom shall receive a salary more than one hundred and fifty dollars per month unless the same be specially fixed by law.

The condition of the public service, so far as it pertains to the Quartermaster's Department, has undergone such a radical change during the past two years that the provisions of the law above referred to do not now meet the requirements of this department or of the public service, and in lieu of a further suspension of said provisions it is recommended that Congress be asked to pass such legislation at its next session, covering this subject, as will fully and properly meet the present and probable future conditions of the service.

The expenditures from all the appropriations relating to the Quartermaster's Department for civilian employees required for all branches of the quartermaster's service has, by reason of the enlarged army and extension of service to Cuba, Porto Rico, Hawaii, and the Philippines, greatly increased. The approximate annual sum now expended for this purpose is about $7,000,000, which sum, if desired, can now be fixed by Congress in the next appropriation act for the support of the Army as the limit of such expenditure, in lieu of $1,000,000, as provided under the above-mentioned law.

Since the organization of the army transport service of this department, it has been found that it is not possible to secure the necessary marine superintendents, navigating officers, and other expert transport employees at a compensation of $150 per month, and therefore that limit, as fixed in the provision of law heretofore referred to, should be changed. To meet the requirements of the service in this particular, I recommend that Congress except from this limit all employees of this department who are paid from the appropriation "Army transportation," inasmuch as this appropriation is the only one pertaining to the Quartermaster's Department from which it is now found necessary to pay any employees a greater sum than $150 per month.

Very respectfully,

F. M. SCHREINER,
*Major and Quartermaster, U. S. Volunteers.*

The QUARTERMASTER-GENERAL OF THE ARMY.

*List showing stations and duties of officers of the Quartermaster's Department, regular establishment, and U. S. Volunteers, August 15, 1900.*

REGULAR ESTABLISHMENT.

| Name and grade. | Stations and duties. | Since— |
|---|---|---|
| QUARTERMASTER-GENERAL. | | |
| *With rank of brigadier-general.* | | |
| Ludington, M. I | Washington, D. C | |
| ASSISTANT QUARTERMASTERS-GENERAL. | | |
| *With rank of colonel.* | | |
| Moore, James M | Chief quartermaster Department of the East, Governors Island, New York Harbor. | Nov. 22, 1899 |
| Scully, James W | New Orleans, La.; disbursing quartermaster | Sept. 14, 1893 |
| Kimball, Amos S | New York City; in charge general depot, Quartermaster's Department. | Apr. 7, 1897 |
| Furey, John V | Philadelphia, Pa.; in charge general depot, Quartermaster's Department. | Mar. 5, 1896 |
| DEPUTY QUARTERMASTERS-GENERAL. | | |
| *With rank of lieutenant-colonel.* | | |
| Atwood, Edwin B | Chicago, Ill.; chief quartermaster Department of the Lakes. | July 15, 1900 |
| Marshall, James M | San Francisco, Cal.; chief quartermaster Department of California. | Nov. 13, 1898 |
| Simpson, John | San Antonio, Tex.; chief quartermaster Department of Texas, and post quartermaster at Fort Sam Houston, Tex. | Apr. 7, 1900 |

*List showing stations and duties of officers of the Quartermaster's Department, regular establishment, and U. S. Volunteers, August 15, 1900*—Continued.

REGULAR ESTABLISHMENT—Continued.

| Name and grade. | Stations and duties. | Since— |
|---|---|---|
| DEPUTY QUARTERMASTERS-GENERAL—continued. | | |
| *With rank of lieutenant-colonel*—Continued. | | |
| Humphrey, Chas. F | En route for duty as chief quartermaster with U. S. forces in China. | |
| Wheeler, Daniel D | St. Louis, Mo.; in charge general depot, Quartermaster's Department; also in charge, under instructions of Quartermaster-General, of construction at Jefferson Barracks, Mo. | Oct. 9, 1899 |
| Barnett, Chas. R | Jeffersonville, Ind.; in charge general depot, Quartermaster's Department. | Apr. 30, 1897 |
| McCauley, Chas. A. H | Philadelphia, Pa.; assistant to depot quartermaster. | Apr. 17, 1896 |
| Hathaway, Forrest H | Chief quartermaster Department of the Missouri, Omaha, Nebr. | May 11, 1899 |
| QUARTERMASTERS. | | |
| *With rank of major.* | | |
| Jacobs, Joshua W | Vancouver Barracks, Wash.; chief quartermaster Department of the Columbia, and disbursing quartermaster, Portland, Oreg. | Feb. 3, 1899 |
| Bird, Charles | Washington, D. C.; on duty in Quartermaster-General's Office; in charge of matters pertaining to rail and water transportation, etc. | June 21, 1895 |
| Clem, John L | San Juan, P. R.; chief quartermaster Department of Porto Rico. | May 2, 1899 |
| Booth, Chas. A | St. Louis, Mo.; on duty at general depot, Quartermaster's Department. | Sept. 25, 1896 |
| Patten, Wm. S | Washington, D. C.; on duty in Quartermaster-General's Office; in charge of matters pertaining to clothing, camp and garrison equipage, finance, money accounts, returns of quartermasters' supplies, national cemeteries, etc. | May 15, 1898 |
| Pond, George E | St. Paul, Minn.; chief quartermaster Department of Dakota; also in charge of construction of water and sewer system, etc., at Bismarck, N. Dak. | Mar. 17, 1899 |
| Pullman, John W | Jeffersonville, Ind.; on duty at general depot, Quartermaster's Department. | June 16, 1899 |
| Pope, James W | Denver, Colo.; chief quartermaster Department of the Colorado. | Aug. 8, 1900 |
| Jones, Francis B | New York City; general superintendent army transport service; granted leave of absence, three months from June 12, 1900. | Jan. 19, 1899 |
| Miller, Crosby P | Manila, Philippine Islands; chief quartermaster Division of the Philippines. | Aug. 31, 1899 |
| True, Theo. E | Washington, D. C.; in charge general depot, Quartermaster's Department. | Apr. 22, 1898 |
| Hyde, John McE | Nagasaki, Japan; depot quartermaster. | Dec. 5, 1899 |
| Ruhlen, George | Honolulu, Hawaiian Islands; depot quartermaster. | Aug. 28, 1898 |
| Miller, Wm. H | Granted leave of absence for two months from July 19, 1900, on expiration of which to report by letter to the Quartermaster-General of the Army for further instructions. Address, 69 Market street, Poughkeepsie, N. Y. | |

*List showing stations and duties of officers of the Quartermaster's Department, regular establishment, and U. S. Volunteers, August 15, 1900*—Continued.

REGULAR ESTABLISHMENT—Continued.

| Name and grade. | Stations and duties. | Since— |
|---|---|---|
| ASSISTANT QUARTERMASTERS. | | |
| *With rank of captain.* | | |
| Jones, Samuel R.<br>Major and Q. M., U. S. Vols. | Governors Island, N. Y. H.; assistant to chief quartermaster Department of the East, and quartermaster at Fort Columbus, N. Y. | Dec. 5, 1899 |
| Robinson, Wm. W., jr | Seattle, Wash.; in charge of construction, etc | July 17, 1896 |
| Thompson, Chas. B<br>Major and Q. M., U. S. Vols. | On leave of absence, on surgeon's certificate of disability, four months from April 23, 1900. | |
| Martin, Medad C<br>Major and Q. M., U. S. Vols. | Washington, D. C.; on duty in Quartermaster-General's Office; in charge of matters pertaining to hire, purchase, construction of barracks, quarters, storehouses, etc. | June 29, 1896 |
| Long, Oscar F<br>Major and Q. M., U. S. Vols. | San Francisco, Cal.; in charge of general depot, Quartermaster's Department, and general superintendent army transport service, San Francisco, Cal. | Sept. 25, 1896 |
| Dudley, Edgar S<br>Major and Judge Adv., Vols. | On detached duty in Judge-Advocate-General's Department. | May 26, 1898 |
| Von Schrader, Frederick<br>Major and Q. M., U. S. Vols. | New York City; assistant to depot quartermaster | Sept. 15, 1899 |
| Sawyer, J. Estcourt<br>Major and Q. M., U. S. Vols. | Boston, Mass.; quartermaster, temporarily | Feb. 12, 1900 |
| Stevens, Robt. R<br>Major and Q. M., U. S. Vols. | Manila, Philippine Islands; chief quartermaster Department of Northern Luzon. | Oct. 24, 1899 |
| Hodgson, Frederick G<br>Major and Q. M., U. S. Vols. | Washington, D. C.; on duty in Quartermaster-General's Office; in charge of matters pertaining to water supply, sewerage, lighting, heating, etc. | Oct. 1, 1897 |
| Bellinger, John B<br>Major and Q. M., U. S. Vols. | West Point, N. Y.; quartermaster and disbursing officer U. S. Military Academy. | June 5, 1900 |
| French, John T., jr<br>Major and Q. M., U. S. Vols. | Chicago, Ill.; assistant to chief quartermaster Department of the Lakes. | June 28, 1900 |
| Aleshire, James B<br>Major and Q. M., U. S. Vols. | En route to Taku, China, to report to commanding general of U. S. forces in China for assignment to duty. | Aug. —, 1900 |
| Littell, Isaac W<br>Major and Q. M., U. S. Vols. | Manila, Philippine Islands; chief quartermaster Department of Southern Luzon. | Oct. 24, 1899 |
| Bingham, Gonzalez S<br>Major and Q. M., U. S. Vols. | Fort St. Michael, Alaska, chief quartermaster Department of Alaska. | Apr. 3, 1900 |
| Devol, Carroll A<br>Major and Q. M., U. S. Vols. | New York City; assistant to general superintendent army transport service. | July 19, 1900 |
| Cruse, Thomas<br>Major and Q. M., U. S. Vols. | New York City; awaiting assignment. | |
| McCarthy, Daniel E | Fort Leavenworth, Kans.; in charge of construction, under instructions of Quartermaster-General. | May 1, 1900 |
| Knight, John T<br>Major and Q. M., U. S. Vols. | Philippine Islands<br>Depot quartermaster, Manila, as shown by last report. | Oct. 24, 1899 |
| Carson, John M., jr<br>Major and Q. M., U. S. Vols. | Washington, D. C.; on duty in Quartermaster-General's Office; assistant in connection with construction of barracks and quarters. | Mar. 5, 1900 |
| Palmer, Alfred M | New York City; assistant to general superintendent army transport service. | June 28, 1899 |
| Baxter, John, jr | Galveston, Tex.; in charge of construction of public buildings at posts in Galveston Harbor, Tex., under instructions of the Quartermaster-General. | June 1, 1900 |

*List showing stations and duties of officers of the Quartermaster's Department, regular establishment, and U. S. Volunteers, August 15, 1900*—Continued.

REGULAR ESTABLISHMENT—Continued.

| Name and grade. | Stations and duties. | Since— |
|---|---|---|
| ASSISTANT QUARTERMASTERS—continued. | | |
| *With rank of captain*—Continued. | | |
| Zalinski, Moses G | Chickamauga Park, Ga.; depot quartermaster | Nov. 10, 1899 |
| Byron, Joseph C | Taku, China; quartermaster | Dec. —, 1899 |
| Wood, Winthrop S | Philippine Islands; quartermaster | Mar. 16, 1900 |
| Williamson, George McK | Philadelphia, Pa.; on temporary duty at Schuylkill Arsenal. | Feb. 20, 1900 |
| Sewell, Robert | Schuylkill Arsenal, Philadelphia, Pa. On leave of absence one month from July 25, 1900. | Mar. 17, 1900 |
| Slavens, Thomas H | Philippine Islands<br>Assistant to chief quartermaster, Division of the Philippines, as shown by last report. | Nov. 13, 1899 |
| Palmer, Charles D | Manila, Philippine Islands; assistant to depot quartermaster. | Apr. 30, 1900 |
| MILITARY STOREKEEPER. | | |
| *With rank of captain.* | | |
| Loeffler, Chas. D. A | Washington, D. C.; on duty at Executive Mansion | July 12, 1898 |

VOLUNTEER QUARTERMASTERS.

[In addition to regular quartermasters, holding volunteer commissions as given above.]

| | | |
|---|---|---|
| QUARTERMASTERS. | | |
| *With rank of major.* | | |
| Ladd, Eugene F<br>Capt., 9th Cav U. S. A. | Habana, Cuba; treasurer of Cuba | Feb. 1, 1899 |
| Hutchins, Morris C | Temporarily quartermaster and acting commissary of subsistence on U. S. transport McPherson. | Dec. 23, 1899 |
| Wilson, James L<br>Capt., 6th Art., U. S. A. | Fort Bayard, N. Mex.; undergoing treatment at general hospital. | Apr. 30, 1900 |
| Roudiez, Leon S<br>Capt., 25th Inf., U. S. A. | Manila, Philippine Islands; on duty in connection with the construction of a refrigerating and ice plant at that place. | Mar. 5, 1900 |
| Brooks, John C. W<br>Capt., 4th Art., U. S. A. | Quartermaster and acting commissary of subsistence on U. S. transport Burnside. | Aug. 1, 1899 |
| Schreiner, Francis M | Washington, D. C.; on duty in Quartermaster-General's Office; in charge of matters pertaining to the personnel of officers of the Quartermaster's Department, both regular and volunteer, and of matters relating to civilian employees on duty in Quartermaster's Department at large, post quartermaster-sergeant, etc. | May 26, 1898 |
| Young, Haldimand P | Newport, R. I.; in charge of construction of public buildings at Forts Adams and Greble, R. I. | June 26, 1899 |
| Baker, Chauncey B<br>Capt., 7th Inf., U. S. A. | Habana, Cuba; assistant to chief quartermaster, Division of Cuba; in charge of quartermaster's depot; also acting chief quartermaster, Division of Cuba. On sick leave one month from August 8, 1900. | Nov. 23, 1898 |
| White, Wm. J | Newport News, Va.; superintending repairs on U. S. transport Buford; also in charge of Josiah Simpson General Hospital, Fort Monroe, Va. | June 1, 1900 |
| Creager, Noble H | Santiago, Cuba; chief quartermaster, Department of Eastern Cuba. | Aug. —, 1900 |

*List showing stations and duties of officers of the Quartermaster's Department, regular establishment, and U. S. Volunteers, August 15, 1900*—Continued.

VOLUNTEER QUARTERMASTERS—Continued.

| Name and grade. | Stations and duties. | Since— |
|---|---|---|
| QUARTERMASTERS—continued. | | |
| *With rank of major*—Continued. | | |
| Cartwright, Geo. S<br>Capt., 24th Inf., U. S. A. | Quemados, Cuba; chief quartermaster, Department of Western Cuba; temporarily in charge of office of chief quartermaster, Division of Cuba, Habana, Cuba. | May 1, 1900 |
| Bickham, Abraham S | Alexandria, Va.; in charge of construction of public buildings at Fort Washington, Md., and Fort Hunt, Va., under instructions of Quartermaster-General. | Mar. 28, 1900 |
| ASSISTANT QUARTERMASTERS. | | |
| *With rank of captain.* | | |
| Parsons, Elias H | St. Asaph, Va.; depot quartermaster, etc | May 30, 1898 |
| McDowell, Edward C | Quartermaster and acting commissary of subsistence on U. S. transport Rawlins. | June 1, 1900 |
| Augur, Chas. M | Santiago, Cuba; under orders to proceed to New York City; on arrival to report by letter to Quartermaster-General for further instructions. | May 20, 1899 |
| Bailey, Geo. G | Philippine Islands<br>Chief quartermaster, Department of the Visayas, Iloilo, Philippine Islands, as shown by last report. | Nov. 9, 1899 |
| King, Cyril W | Fort Morgan, Ala.; in charge of construction of public buildings, under instructions of Quartermaster-General. | Mar. 26, 1900 |
| Williams, Lewis V | Philippine Islands<br>Depot quartermaster, Dagupan, Philippine Islands, as show by last report. | Nov. 13, 1899 |
| Swobe, Thomas | Philippine Islands<br>Chief quartermaster, District of Mindanao and Jolo, Zamboanga, Philippine Islands, as shown by last report. | Do. |
| Brown, Robt. L | Chicago, Ill.; on leave of absence on surgeon's certificate of disability, one month from July 24, 1900, with permission to apply for an extension of one month. | |
| Kimball, Amos W | Quartermaster; Presidio of San Francisco, Cal., temporarily. | May 18, 1899 |
| Walton, Moses, jr | Quartermaster and acting commissary of subsistence on U. S. transport Sedgwick. | July —, 1900 |
| Patton, Jonathan N | Quartermaster and acting commissary of subsistence on U. S. transport Logan. | Sept. 20, 1899 |
| Perry, Alexander W<br>1st lieut., 9th Cav., U. S. A. | Philippine Islands<br>Depot quartermaster, San Isidro, Philippine Islands, as shown by last report. | Jan. 20, 1899 |
| Sawtelle, Chas. G., jr<br>1st lieut. 2d Cav., U. S. A. | Quartermaster and acting commissary of subsistence on U. S. transport Thomas. | Feb. 8, 1900 |
| Allen, Walter | Quartermaster, Jefferson Barracks, Mo | June 6, 1899 |
| Fenton, Clifton L | En route to Seattle, Wash., for temporary duty in connection with care and shipment of animals, etc. | |
| Lafitte, Jaques de L<br>1st lieut., 1st Inf., U. S. A. | Delaware City, Del.; in charge of construction of public buildings at Fort Du Pont, Del., under instructions of Quartermaster-General. | Apr. 4, 1900 |
| Ekin, Wm. M | Philippine Islands<br>Depot quartermaster, Bacoor, Philippine Islands, as shown by last report. | June 7, 1899 |

*List showing stations and duties of officers of the Quartermaster's Department, regular establishment, and U. S. Volunteers, August 15, 1900*—Continued.

VOLUNTEER QUARTERMASTERS—Continued.

| Name and grade. | Stations and duties. | Since— |
|---|---|---|
| ASSISTANT QUARTERMASTERS—continued. | | |
| *With rank of captain*—Continued. | | |
| Ham, Samuel V<br>1st lieut., 5th Inf., U. S. A. | Santiago, Cuba; depot quartermaster | July —, 1900 |
| Coulling, Wm. M | Quartermaster and acting commissary of subsistence on U. S. transport Sheridan. | Jan. 1, 1899 |
| Sulzer, Raymond | Philippine Islands<br>Depot quartermaster, Jolo, Philippine Islands, as shown by last report. | Sept. 2, 1898 |
| Bradley, John J<br>1st lieut., 14th Inf., U. S. A. | Quartermaster and acting commissary of subsistence on U. S. transport Hancock. | Jan. 13, 1899 |
| McHarg, John W | Seattle, Wash.; on temporary duty in connection with the shipment of transportation to China; on completion to assume duty as quartermaster and acting commissary of subsistence on U. S. transport Kintuck, proceeding thereon to Taku, China, reporting to commanding general of U. S. forces in China for duty. | Aug. —, 1900 |
| Chamberlain, Harry B | Colon, Cuba; in charge of construction, purchasing, etc., for civil business. | Mar. 25, 1899 |
| Scott, Wm. S | Ciego de Avila, Cuba; quartermaster; in charge of Jucaro and Moron Railroad. | Mar. 24, 1900 |
| Baker, Chas. T | Quartermaster and acting commissary of subsistence on U. S. transport Sumner. | Feb. 13, 1900 |
| Colquhoun, Wm. C. R | San Juan, Porto Rico; assistant to chief quartermaster Department of Porto Rico. | Nov. 21, 1899 |
| Downs, Thomas | Fort Stevens, Oreg.; in charge of construction | Sept. 12, 1899 |
| Barker, Walter B | Cienfuegos, Cuba; depot quartermaster; on leave of absence two months from August 2, 1900. | Nov. 26, 1898 |
| McMillin, Marion M | Manila, Philippine Islands; quartermaster | May 13, 1900 |
| Goodale, Geo. L | Columbia Barracks, Quemados, Cuba; quartermaster. | May 10, 1899 |
| Baker, Jesse M | Quartermaster and acting commissary of subsistence on U. S. transport Grant. | Dec. 23, 1898 |
| Dare, Jeremiah Z | Washington, D. C.; on duty in Quartermaster-General's Office; in charge of miscellaneous war claims growing out of war with Spain, and also wagon transportation, purchase of cavalry and artillery horses, regular supplies, etc. | Aug. 15, 1898 |
| Michael, James S | Philippine Islands<br>Quartermaster, 5th District, Department of Northern Luzon, Angeles, Philippine Islands, as shown by last report. | Jan. 24, 1900 |
| Haan, Wm. G<br>1st. Lieut., 3d Art., U. S. A. | Philippine Islands<br>Depot quartermaster Iloilo, as shown by last report. | Oct. 17, 1898 |
| Blunt, J. Y. Mason<br>1st Lieut., 3d Cav., U. S. A. | Santiago, Cuba; assistant to chief quartermaster Department of Santiago and Puerto Principe. | Dec. 15, 1899 |
| Hay, Wm. H<br>1st Lieut., 10th Cav., U. S. A. | Matanzas, Cuba; collector of customs; granted leave of absence for two months from July 4, 1900. | Dec. 28, 1898 |
| Symmonds, Chas. J<br>1st Lieut., 7th Cav., U. S. A. | Puerto Principe, Cuba; quartermaster | Nov. 22, 1898 |
| Horton, Wm. E | Philippine Islands<br>Assistant to chief quartermaster Division of the Philippines, Manila, Philippine Islands, as shown by last report. | Aug. 21, 1899 |

*List showing stations and duties of officers of the Quartermaster's Department, regular establishment, and U. S. Volunteers, August 15, 1900*—Continued.

VOLUNTEER QUARTERMASTERS—Continued.

| Name and grade. | Stations and duties. | Since— |
|---|---|---|
| ASSISTANT QUARTERMASTERS—continued. | | |
| *With rank of captain*—Continued. | | |
| Cannon, Wm. C | Quartermaster and acting commissary of subsistence on U. S. transport Sherman. | Mar. 14, 1900 |
| Garrard, Louis F., jr | Philippine Islands<br>Depot quartermaster and chief quartermaster 1st District of Northwestern Luzon, Vigan, Philippine Islands, as shown by last report. | Oct. —, 1899 |
| Batchelder, Nathan P | San Francisco, Cal.; assistant to depot quartermaster. | Apr. 27, 1899 |
| Fredendall, Ira L | En route to Taku, China; reporting to commanding general of U. S. forces in China for duty. | Aug. —, 1900 |
| May, Henry J | Quartermaster and acting commissary of subsistence, U. S. transport Crook. | Sept. 20, 1899 |
| Pettus, Harry L | Quartermaster and acting commissary of subsistence on U. S. transport Meade. | July 26, 1899 |
| McCaull, P. H | Quartermaster and acting commissary of subsistence on U. S. transport Egbert. | July 18, 1899 |
| Orr, Sylvanus G | Manila, Philippine Islands<br>Assistant to chief quartermaster Department of Northern Luzon, as shown by last report. | Nov. 28, 1899 |
| Irwin, Geo. LeR.<br>1st Lieut., 5th Art., U. S. A. | Philippine Islands<br>Quartermaster, El Deposito, Philippine Islands, as shown by last report. | July 13, 1899 |
| Arnold, Danl. W | Quartermaster and acting commissary of subsistence on U. S. transport Kilpatrick. | Sept. 20, 1899 |
| Baker, Laurance C | Quartermaster and acting commissary of subsistence on U. S. transport Athenian, proceeding thereon to Kobe, Japan; on arrival to cable Quartermaster-General for further instructions. | July 24, 1900 |
| Povey, George W | Philippine Islands<br>Depot quartermaster, Aparri, Philippine Islands, as shown by last report. | Dec. 30, 1899 |
| Miles, P. L<br>1st Lieut., 14th Inf., U. S. A. | Quartermaster and acting commissary of subsistence on U. S. transport Warren. | Oct. 12, 1899 |
| Butt, Archibald W | Philippine Islands<br>Quartermaster and acting commissary of subsistence on U. S. transport Port Stephens, as shown by last report. | Apr. 20, 1900 |
| Gillem, Alvan C | Philipine Islands; quartermaster | June 28, 1900 |
| Lamoreux, Thomas B<br>1st Lieut., 2d Art., U. S. A. | Baltimore, Md.; disbursing quartermaster, also in charge, under direction of the Quartermaster-General, of the construction work at the various defenses in Baltimore Harbor. | June 1, 1900 |
| Davison, Peter W<br>1st Lieut., 22d Inf., U. S. A. | Manila, Philippine Islands; awaiting orders, pending receipt of official bond. | May 12, 1900 |
| Gibbon, John, jr | Quartermaster and acting commissary of subsistence on U. S. transport Rosecrans. | Aug. 1, 1900 |
| Hampton, Kensey J | Quartermaster and acting commissary of subsistence on U. S. tug Slocum, en route to San Francisco, Cal., where he will take temporary station, reporting by telegraph to the Quartermaster-General for further instructions. | July —, 1900 |
| Barnhardt, George C<br>1st Lieut., 6th Cav., U. S. A. | Taku, China; awaiting orders pending receipt of official bond. | July 27, 1900 |

*List of quartermasters, U. S. Volunteers, who have been mustered out of volunteer service since last report.*

| Name. | Rank. | Actual date of muster out. |
|---|---|---|
| Wm. A. Burnside | Captain and assistant quartermaster | Apr. 17, 1900 |
| Edwin R. Butler | do | Jan. 1, 1900 |
| Sydney A. Cloman [a] | do | Sept. 7, 1899 |
| Clifton L. Fenton | do | Sept. 7, 1900 |
| Benjamin Johnson | do | July 23, 1900 |
| Henry L. Kinnison | do | May 12, 1900 |
| John Landstreet, jr. [b] | do | Sept. 18, 1899 |
| Charles D. Palmer [c] | do | Mar. 1, 1900 |
| Francis L. Payson [d] | do | Mar. 22, 1900 |
| Edgar B. Robertson [e] | Major and quartermaster | Feb. 5, 1900 |
| Charles C. Walcutt, jr. [f] | Captain and assistant quartermaster | Sept. 18, 1899 |
| Geo. McK. Williamson [g] | do | July 23, 1899 |
| Frank W. Woodring | do | Aug. 5, 1899 |

[a] Appointed captain, Twenty-third Infantry, U. S. A.
[b] Appointed captain and acting commissary of subsistence, U. S. V.
[c] Appointed captain and assistant quartermaster, U. S. A
[d] Appointed major and paymaster, U. S. A.
[e] Appointed major, Fifteenth Infantry, U. S. A.
[f] Appointed major, Forty-fourth Infantry, U. S. V.
[g] Appointed captain and assistant quartermaster, U. S. A.

*List of regular officers, Quartermaster's Department, holding volunteer commissions, who were mustered out of volunteer service under ranks indicated and at dates set forth.*

| Name. | Rank. | Actual date of muster out. |
|---|---|---|
| Guy Howard [a] | Major and quartermaster | Oct. 22, 1899 |
| William H. Miller [b] | do | Aug. 12, 1900 |
| George Ruhlen [b] | do | Jan. 6, 1900 |

[a] Killed in action.
[b] Appointed major and quartermaster, U. S. A.

The following-named officers were retired from active service since the date of my last report:

Maj. John W. Summerhayes, quartermaster, U. S. Army, January 6, 1900.
Col. J. G. C. Lee, assistant quartermaster-general, U. S. Army, August 12, 1900.

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WAR DEPARTMENT,
QUARTERMASTER-GENERAL'S OFFICE,
*Washington, September 17, 1900.*

GENERAL: I have the honor to report that during the fiscal year ended June 30, 1900, I have been on duty in this office, in charge of the regular-supplies branch, and pertaining to the work of which branch I respectfully submit the following report:

## REGULAR SUPPLIES.

This branch has charge of all matters relating to the procurement and distribution of supplies, stoves, and heating apparatus, and repair and maintenance of same, for heating barracks and quarters; of ranges, stoves, and apparatus for cooking; of fuel and lights for enlisted men, guards, hospitals, storehouses, and officers; of equipment of bakehouses to carry on post bakeries; of the necessary furniture, textbooks, paper, and equipments for the post schools; of the tableware and mess furniture for kitchens and mess halls for enlisted men; of forage and bedding for the public animals of the Quartermaster's

Department, and for the authorized number of officers' horses; of straw for soldiers' bedding; of stationery and blank books for the Quartermaster's Department, certificates for discharged soldiers, and blank forms for the Paymaster's and Quartermaster's departments; the purchase of cavalry and artillery horses, mules, harness, wagons, ambulances, etc., and all matters pertaining to wagon transportation of the Army, and of all the necessary correspondence connected with the work of this branch.

This branch has charge also of matters relating to all contracts to which the Quartermaster's Department is a party.

### CONTRACTS.

During the fiscal year ended June 30, 1900, 1,781 formal contracts were received, examined, and filed in this office. Seven hundred and ninety-nine were for 356,838,987 pounds of coal, 42,926 cords of wood, 9,350 bushels of charcoal, 1,273,036 pounds of corn, 31,038,505 pounds of oats, 2,684,000 pounds of barley, 40,000 pounds of middlings, 2,138,005 pounds of bran, 59,700,036 pounds of hay, and 5,682,700 pounds of straw; 19 for indefinite quantities of fuel and forage; 135 for buildings; 23 for repair of buildings; 30 for plumbing; 3 for gas piping; 34 for heating apparatus; 1 for electric elevator; 5 for machinery; 6 for electric fixtures; 1 for structural steel beams; 1 for saw logs; 31 for water and water supply; 10 for sinking wells; 1 for constructing water tanks; 1 for filtering apparatus; 1 for fresh-water distilling plant; 2 for refrigerating apparatus and ice plants; 1 for garbage crematory; 15 for sewerage; 1 for drainage; 6 for walks and roadways; 1 for inclosing fence; 2 for constructing walls; 1 for constructing railroad spur; 3 for constructing wharves; 1 for extending wharf; 1 for constructing bulkheads and retaining-walls; 221 for lease of lands and buildings; 210 for clothing and camp and garrison equipage; 1 for napthaline; two for petroleum paper; 4 for lockers; 9 for packing-boxes; 1 for casks, tierces, and barrels; 1 for hand litters; 38 for hire of vessels; 71 for transportation; 13 for repairs to means of transportation; 10 for wagons and wagon parts; 3 for harness; 4 for ranges; 4 for tableware and kitchen utensils; 5 for mineral oil; 1 for gasoline; 2 for illuminating gas; 3 for illuminating supplies; 6 for services; 15 for telephone service; 1 for record books; 12 for printing; 1 for typewriters; 3 for caskets; and 1 for headstones.

### PURCHASES AT GENERAL DEPOTS.

The following are the payments made by quartermasters for purchases for the Army at general depots, for use thereat, and for shipment elsewhere, during the fiscal year ended June 30, 1900, from appropriations pertaining to that period:

| Depot. | Regular supplies. | Incidental expenses. | Barracks and quarters. | Army transportation. | Total. |
|---|---|---|---|---|---|
| New York | $1,214,950.53 | $79,629.18 | $95,390.11 | $295,408.46 | $1,685,378.28 |
| Philadelphia | 9,789.09 | 20,911.58 | 2,634.05 | 90,192.28 | 123,527.00 |
| Washington | 96,887.32 | 2,895.35 | 937.64 | 27,790.77 | 128,511.08 |
| St. Louis | 7,085.95 | 886.52 | 2,865.45 | 60,813.94 | 71,651.86 |
| Jeffersonville | 208,233.74 | 31,960.93 | 16,254.69 | 327,844.58 | 584,293.94 |
| San Francisco | 584,535.89 | 58,456.17 | 110,383.46 | 178,784.85 | 932,160.37 |
| Total | 2,121,482.52 | 194,739.73 | 228,465.40 | 980,829.88 | 3,525,517.58 |

*Typewriters, office safes, Blodgett ovens, paulins, field desks, and army ranges.*

| | Typewriters. | | | Office safes. | | | Blodgett ovens. | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number. | Total. | Average. | Number | Total. | Average. | Number. | Total. | Average. |
| New York depot | 147 | $10,224.50 | $69.55 | 100 | $1,840.00 | $18.40 | 248 | $40,912.00 | $164.96 |
| San Francisco depot | 73 | 5,753.40 | 78.81 | 3 | 255.00 | 85.00 | ...... | .......... | ...... |
| Total | 220 | 15,977.90 | 72.62 | 103 | 2,095.00 | 20.34 | 248 | 40,912.00 | 164.96 |

| | Paulins. | | | Field desks. | | |
|---|---|---|---|---|---|---|
| | Number. | Total. | Average. | Number. | Total. | Average. |
| New York depot | 875 | $16,340.30 | $18,67 | ........ | .......... | ........ |
| San Francisco depot | 1,051 | 29,595.00 | 28.16 | 550 | $4,820.50 | $8.76 |
| Total | 1,926 | 45,935.30 | 23.85 | 550 | 4,820.50 | 8.76 |

| | Army ranges. | | | Field ranges. | | |
|---|---|---|---|---|---|---|
| | Number. | Total. | Average. | Number. | Total cost. | Average. |
| San Francisco depot | 28 | $4,210.50 | $150.37 | 358 | $11,784.00 | 32.92 |
| Jeffersonville depot | 431 | 22,064.25 | 51.19 | 3,182 | 100,256,65 | 31.51 |
| Total | 459 | 26,274.75 | 57.24 | 3,540 | 112,040.65 | 31.65 |

NOTE.—The army ranges purchased at San Francisco had full outfit of fixtures and were of much larger size than those purchased at Jeffersonville. Those purchased at Jeffersonville were without fixtures.

During the last fiscal year there have been shipped to the Philippine Islands for use of the army there—

| | |
|---|---|
| Cavalry horses | 1,506 |
| Riding horses, for mounting infantry | 4,468 |
| Bell mares | 6 |
| Draft mules | 3,008 |
| Pack mules | 500 |

of which there were lost in transit 322 horses and 405 mules. There were also shipped—

| | |
|---|---|
| Escort wagons | 841 |
| Ambulances | 116 |
| Spring delivery wagons, covered | 78 |
| Light farm wagons | 25 |
| Dougherty spring wagons | 21 |
| Five-ton drays | 6 |
| Single sets wagon harness, half lead, half wheel | 4,616 |
| Single sets ambulance harness, half lead, half wheel | 372 |
| Sets 6-mule wagon harness | 56 |

## SAINT ASAPH DEPOT, VA.

There were repaired and painted at the Saint Asaph Depot, Va., during the fiscal year ended June 30, 1900—

| | |
|---|---|
| Escort wagons | 384 |
| "Farmer's handy wagons" | 15 |
| Spring wagons | 5 |
| Sprinkling carts | 2 |
| Sanitary wagons | 2 |
| Trucks | 2 |
| Sanitary excavating apparatus | 1 |
| Ambulances | 79 |

This transportation has been held for issue as required.

## SALE OF SURPLUS AND CONDEMNED ANIMALS.

| | Number. | Total proceeds. | Average. |
|---|---|---|---|
| HORSES. | | | |
| Cavalry (condemned) | 869 | $28,534.63 | $32.83 |
| Artillery (condemned) | 162 | 5,488.10 | 33.88 |
| Draft (condemned) | 174 | 8,690.75 | 49.95 |
| Surplus | 80 | 6,582.79 | 82.28 |
| Total | 1,285 | 49,296.27 | 38.36 |
| MULES. | | | |
| Condemned | 470 | 16,949.13 | 36.06 |
| Surplus | 1,461 | 137,261.87 | 93.95 |
| Total | 1,931 | 154,211.00 | 79.86 |

During the fiscal year there were 772 horses and 658 mules lost, died, stolen, etc.

There remained on hand at the close of the fiscal year June 30, 1900, according to the latest reports, 16,924 horses and 10,669 mules.

## ANIMALS ON HAND.

| | Horses. | Mules. |
|---|---|---|
| On hand July 1, 1899 | 12,622 | 13,158 |
| Purchased since | 6,359 | 100 |
| | 18,981 | 13,258 |
| Sold during fiscal year 1900 | 1,285 | 1,931 |
| Lost, died, strayed, and stolen | 772 | 658 |
| | 2,057 | 2,589 |
| Total remaining on hand June 30, 1900, according to latest reports received. | 16,924 | 10,669 |

It is remarked that no full reports in relation to animals have been received from the Philippines, and it is believed that when full reports are made the numbers above stated as remaining on hand June 30, 1900, will be somewhat modified.

## MEANS OF TRANSPORTATION.

The following statement shows the number and cost of public animals, wagons, and harness purchased from July 1, 1899, to June 30, 1900, inclusive:

| | Number. | Total cost. | Average cost, each. |
|---|---|---|---|
| Cavalry horses | 1,590 | $171,044.06 | $107.58 |
| Artillery horses | 106 | 14,950.50 | 141.04 |
| Riding horses, for mounting infantry | 4,650 | 354,645.37 | 76.26 |
| Draft horses | 11 | 1,813.00 | 164.82 |
| Bell horses | 2 | 100.00 | 50.00 |
| Pack mules | 100 | 6,000.00 | 60.00 |
| Army wagons | 100 | 10,600.00 | 106.00 |
| Escort wagons | 600 | 57,590.00 | 95.98 |
| Wagonettes, or other kinds | 17 | 3,994.00 | 234.94 |
| Ambulances: | | | |
| Red Cross | 125 | 19,717.50 | 157.74 |
| 1900 pattern | 1 | 225.00 | 225.00 |
| Trucks, two and four horse | 7 | 2,550.00 | 364.29 |
| Dump carts | 35 | 2,262.86 | 64.65 |

*Means of transportation*—Continued.

| | Number. | Total cost. | Average cost, each. |
|---|---|---|---|
| Dump carts, sanitary | 15 | $2,593.00 | $172.87 |
| Carts, spring | 1 | 45.00 | 45.00 |
| Express wagon | 1 | 125.00 | 125.00 |
| Water wagons | 8 | 2,054.50 | 256.81 |
| Spring wagons, delivery | 117 | 15,081.00 | 128.89 |
| Miscellaneous wagons | 10 | 1,666.00 | 166.60 |
| Wagon covers | 3,710 | 14,178.06 | 3.82 |
| Sleighs | 29 | 787.50 | 27.16 |
| Single sets harness | 2,437 | 38,903.74 | 15.96 |
| Cart harness | 10 | 200.75 | 20.07 |
| Pack saddles and parts | 240 | 7,509.75 | 31.29 |
| Aparejos and parts | 1,085 | 36,277.06 | 33.43 |
| Total | | 764,913.65 | |

*Statement of public animals purchased, and their cost, in each department and depot, during fiscal year 1900.*

| From what department, depot, or post, or by what officer. | Horses. | | | | | |
|---|---|---|---|---|---|---|
| | Cavalry and artillery. | | | Draft, riding, pack, and bell. | | |
| | Number. | Total cost. | Average cost. | Number. | Total cost. | Average cost. |
| Department: | | | | | | |
| California | 61 | $4,429.48 | $72.61 | | | |
| Colorado | 178 | 20,318.70 | 114.15 | | | |
| Columbia | 78 | 9,640.25 | 123.59 | 2 | $100.00 | $50.00 |
| Dakota | 12 | 900.00 | 75.00 | 2 | 400.00 | 200.00 |
| Missouri | 316 | 37,660.05 | 119.17 | | | |
| Texas | 44 | 4,656.08 | 105.82 | | | |
| Porto Rico | 435 | 39,835.50 | 91.57 | | | |
| Depot: | | | | | | |
| Jeffersonville | 20 | 2,880.00 | 144.00 | 2 | 288.00 | 144.00 |
| New York | 21 | 3,575.00 | 170.23 | 2 | 400.00 | 200.00 |
| St. Louis | 31 | 4,526.00 | 146.00 | 2 | 310.00 | 155.00 |
| San Francisco | | | | 3 | 415.00 | 138.33 |
| Washington | 251 | 28,938.50 | 115.29 | | | |
| Special officer: Maj. J. B. Aleshire | 249 | 28,635.00 | 115.00 | | | |
| Total | 1,696 | 185,994.56 | 109.66 | 13 | 1,913.00 | 147.15 |

## RIDING HORSES FOR MOUNTING INFANTRY IN PHILIPPINE ISLANDS, PURCHASED FROM APPROPRIATION FOR CAVALRY AND ARTILLERY HORSES.

| Purchased. | Number. | Total cost. | Average cost. |
|---|---|---|---|
| Chief quartermaster: | | | |
| Department of California | 1,300 | $86,436.37 | $66.49 |
| Department of the Colorado | 150 | 11,175.00 | 74.50 |
| Department of the Columbia | 1,850 | 131,325.00 | 70.90 |
| Department of Dakota | 150 | 16,095.00 | 107.30 |
| Department of the Missouri | 150 | 13,245.00 | 88.30 |
| Department of Texas | 350 | 24,199.00 | 69.14 |
| Maj. J. B. Aleshire | 700 | 72,170.00 | 103.10 |
| Total | 4,650 | 354,645.37 | 76.26 |

## MULES (PACK).

| | | | |
|---|---|---|---|
| Department of California | 100 | $6,000.00 | $60.00 |

## COAL FOR TRANSPORT VESSELS PURCHASED UNDER CONTRACT AND IN OPEN MARKET.

*New York Harbor.*—Twenty-five thousand three hundred and ninety tons Georges Creek Big Vein Cumberland coal, at $2.50 per ton of 2,240 pounds; 27,105 tons same, at $3 per ton of 2,240 pounds.

*Havana, Cuba.*—Twenty thousand tons Georges Creek, Pocahontas, Reynoldsville, or Pennsylvania bituminous coal, or equal, at $3.49 per ton of 2,240 pounds; 20,000 tons of Pennsylvania Victor coal, at $5.35 per ton of 2,240 pounds.

*Santiago, Cuba.*—Two thousand five hundred tons Georges Creek Big Vein Cumberland coal, at $5 per ton of 2,240 pounds.

*San Francisco.*—Nine hundred and sixty-five tons bituminous coal, at $8 per ton of 2,240 pounds; 172,176,856 pounds bituminous coal, at a cost of $634,912.89.

*Seattle, Wash.*—Twenty-two thousand seven hundred and seventy-eight tons bituminous coal, at a cost of $91,888. (Note: 2,173 tons of this coal purchased at Dutch Harbor, at a cost of $12,925.)

*Vancouver, Wash.*—Seven hundred and fifty tons bituminous coal, at $5.25 per 2,240 pounds; 111 tons bituminous coal, at $7 per 2,240 pounds; 148 tons bituminous coal, at $5.50 per 2,240 pounds; 1,963,740 pounds bituminous coal, at $0.245 per 100 pounds; 631,200 pounds bituminous coal, at $0.32 per 100 pounds.

*Honolulu, H. I.*—Two thousand and seven tons Comox coal, at $10.65 per ton of 2,240 pounds; 1,605 tons Cumberland coal, at $10.43 per ton of 2,240 pounds; 40 tons Pocahontas coal, at $9.50 per ton of 2,240 pounds; 747 tons Cumberland coal, at $9.93 per ton of 2,240 pounds; 1,283 tons Gret coal, at $8 per ton of 2,240 pounds; 1,000 tons Waratah coal, at $8 per ton of 2,240 pounds; 1,925 tons Roslyn coal, at $8.50 per ton of 2,240 pounds.

*Foreign coaling stations en route to Manila via Suez* (Cardiff coal, per ton of 2,240 pounds):

*Gibraltar.*—Six hundred and nineteen tons, at 21s. 8d.; 200 tons, at at 27s. 6d.

*Malta.*—Four thousand two hundred and seven tons, at 19s. 5d.; 550 tons, at 23s. 6d.

*Port Said.*—Four hundred and forty-nine tons, at 23s. 3d.; 546 tons, at 30s. 3d.

*Aden.*—Nine hundred and eighty-three tons, at 23s.

*Colombo.*—One thousand five hundred and seventy tons, at 35s. 6d.

*Singapore.*—Two thousand four hundred and twenty-eight tons, at 32s.

*Manila, P. I.*—Two thousand three hundred and ninety tons Pocahontas coal, at $2.50 per ton of 2,240 pounds. (Shipped from Norfolk, Va., on U. S. collier No. 1, formerly *St. Mark.*)

*Coal purchased, Philippines, Nagasaki, Hongkong, and Yokohama, for transports, during fiscal year 1900.*

| Kind of coal. | Quantity. | Price per ton. |
|---|---|---|
| | *Tons.* | |
| Komatsu | 53,158 | $3.85. |
| Kishima | 33,692 | $3.50. |
| Mineji | 4,968 | $3.95. |
| Namazuta | 4,825 | 11.00 yen. |
| Gotoku | 1,600 | 10.40 yen. |
| Cardiff | 10,925 | 20.00 yen. |
| Takasima | 2,153 | 9.50 yen. |
| Cardiff | 545 | 23.5 yen. |
| Do | 2,475 | 19.75 yen. |
| Japanese best | 4,723 | $11.50 Mexican. |
| Do | 791 | $12.50 Mexican. |
| Do | 80 | $16.00 Mexican. |
| Do | 3 | $18.00 Mexican. |
| Do | 16 | $13.00 Mexican. |
| Do | 270 | $18.50 Mexican. |
| Australian | 1,775 | $15.00 Mexican. |
| Do | 2 | $20.00 Mexican. |
| Do | 10 | $22.50 Mexican. |
| Total | 122,011 | |

In addition to the above, Colonel Miller's report shows coal purchased by Lieut. Col. J. W. Pope, amounting to $96,679.20 (approximately 16,000 tons); and by Major Devol, 13,163 tons, at a total cost of $78,832.21, gold.

### RÉSUMÉ.

| | Tons. |
|---|---|
| New York Harbor | 52,495 |
| Havana, Cuba | 40,000 |
| Santiago, Cuba | 2,500 |
| San Francisco, Cal | 77,830 |
| Seattle, Wash | 22,778 |
| Vancouver, Wash | 2,167 |
| Honolulu, H. I | 8,607 |
| Foreign coaling stations en route to Manila via Suez | 11,552 |
| Manila (shipped from United States) | 2,390 |
| Purchased in Philippines, Nagasaki, Hongkong, and Yokohama | 151,174 |
| Total | 371,493 |

*Forage and straw purchased and shipped to Cuba, Porto Rico, and the Philippine Islands.*

### TO THE PHILIPPINE ISLANDS.

| Shipped from— | Oats. | Hay. | Bran. | Barley. | Straw. | Carrots. | Shipped to— |
|---|---|---|---|---|---|---|---|
| | *Pounds.* | *Pounds.* | *Pounds.* | *Pounds.* | *Pounds.* | *Pounds.* | |
| San Francisco | 14,046,551 | 12,008,575 | 183,457 | 30,000 | .......... | 8,240 | |
| Seattle, Wash | 8,433,605 | 16,966,261 | 366,020 | .......... | .......... | .......... | |
| Tacoma, Wash | 1,381,636 | 453,123 | 121,933 | .......... | .......... | .......... | |
| New York, N. Y | .......... | 6,521,835 | .......... | .......... | .......... | .......... | |
| Vancouver (via) | 1,274,640 | 1,052,243 | 20,000 | .......... | .......... | .......... | |
| Total | 25,136,432 | 37,002,037 | 691,410 | 30,000 | .......... | 8,240 | |

### TO PORTO RICO.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| New York, N. Y | 9,877,399 | 12,043,831 | 50,000 | .......... | .......... | .......... | |

*Forage and straw purchased and shipped to Cuba, etc.*—Continued.

TO CUBA.

| Shipped from— | Oats. | Hay. | Bran. | Barley. | Straw. | Carrots. | Shipped to— |
|---|---|---|---|---|---|---|---|
| New York, N. Y | 121,600 | 125,624 | .......... | .......... | 12,165 | .......... | Baracoa. |
| Do | 4,648,725 | 4,935,719 | 84,130 | .......... | .......... | .......... | Cienfuegos. |
| Do | 11,180,511 | 16,614,006 | 248,650 | .......... | 120,055 | .......... | Havana. |
| Do | 2,944,563 | 3,006,050 | .......... | .......... | .......... | .......... | Gibara. |
| Do | 3,976,194 | 5,909,585 | 82,730 | .......... | .......... | .......... | Matanzas. |
| Do | 8,499,751 | 8,862,945 | 50,720 | .......... | 116,221 | .......... | Santiago. |
| Do | 3,414,579 | 5,498,093 | .......... | .......... | 100,302 | .......... | Nuevitas. |
| Galveston, Tex | 1,165,820 | .......... | .......... | .......... | .......... | .......... | Do. |
| Total | 35,946,743 | 44,952,022 | 466,230 | .......... | 348,743 | .......... | |

RECAPITULATION.

| Shipped to— | Oats. | Hay. | Bran. | Barley. | Straw. | Carrots. |
|---|---|---|---|---|---|---|
| | *Pounds.* | *Pounds.* | *Pounds.* | *Pounds.* | *Pounds.* | *Pounds.* |
| Philippines | 25,136,432 | 37,002,037 | 691,410 | 30,000 | .......... | 8,240 |
| Porto Rico | 9,877,399 | 12,043,831 | 50,000 | .......... | .......... | .......... |
| Cuba | 35,946,743 | 44,952,022 | 466,230 | .......... | 348,743 | .......... |
| Grand total | 70,960,574 | 93,997,890 | 1,207,640 | 30,000 | 348,743 | 8,240 |

*Native forage purchased, Manila.*

| | | | | | |
|---|---|---|---|---|---|
| Paddy | pounds | 752,672 | Grass | pounds | 10,710,374 |
| Miel | gallons | 5,060 | Palay | do | 2,302,788 |
| Tique tique | pounds | 93,496 | Straw | do | 89,667 |
| Rice | do | 25,105 | | | |

After the declaration of peace with Spain, it appeared there would be a large number of surplus mules left on hand in excess of the needs of the service. Upon the authority of the Secretary of War, 1,461 of the number were sold, all realizing good prices, the average being $93.95 each. Upon the breaking out of troubles in the Philippines, it was ascertained that a large number of mules would be required on those islands, and the sales were discontinued. The department has been able to supply all mules necessary for draft purposes from those on hand without the purchase of additional ones.

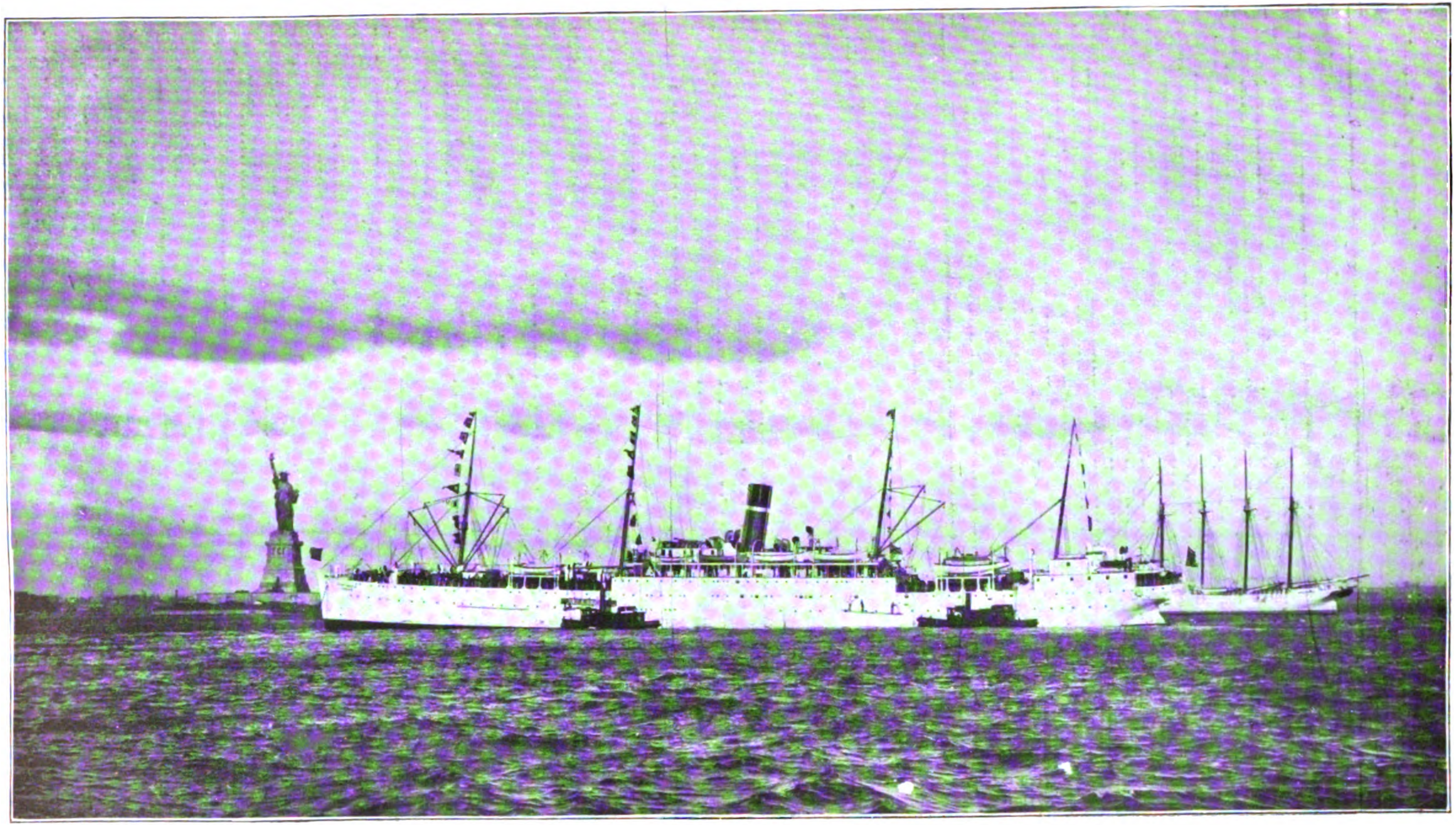
During the year, a large number of wagons, ambulances, and harness, which had been left over from the Spanish-American war, were turned in to the St. Asaph and Chickamauga depots of the Quartermaster's Department, where all that were in such condition as to justify their repair were overhauled, painted, put into serviceable condition, and are being held in readiness for shipment to Manila. Those whose condition would not justify such repair, were sold at public auction after due advertisement, and the money received turned into the United States Treasury.

I am, General, very respectfully,

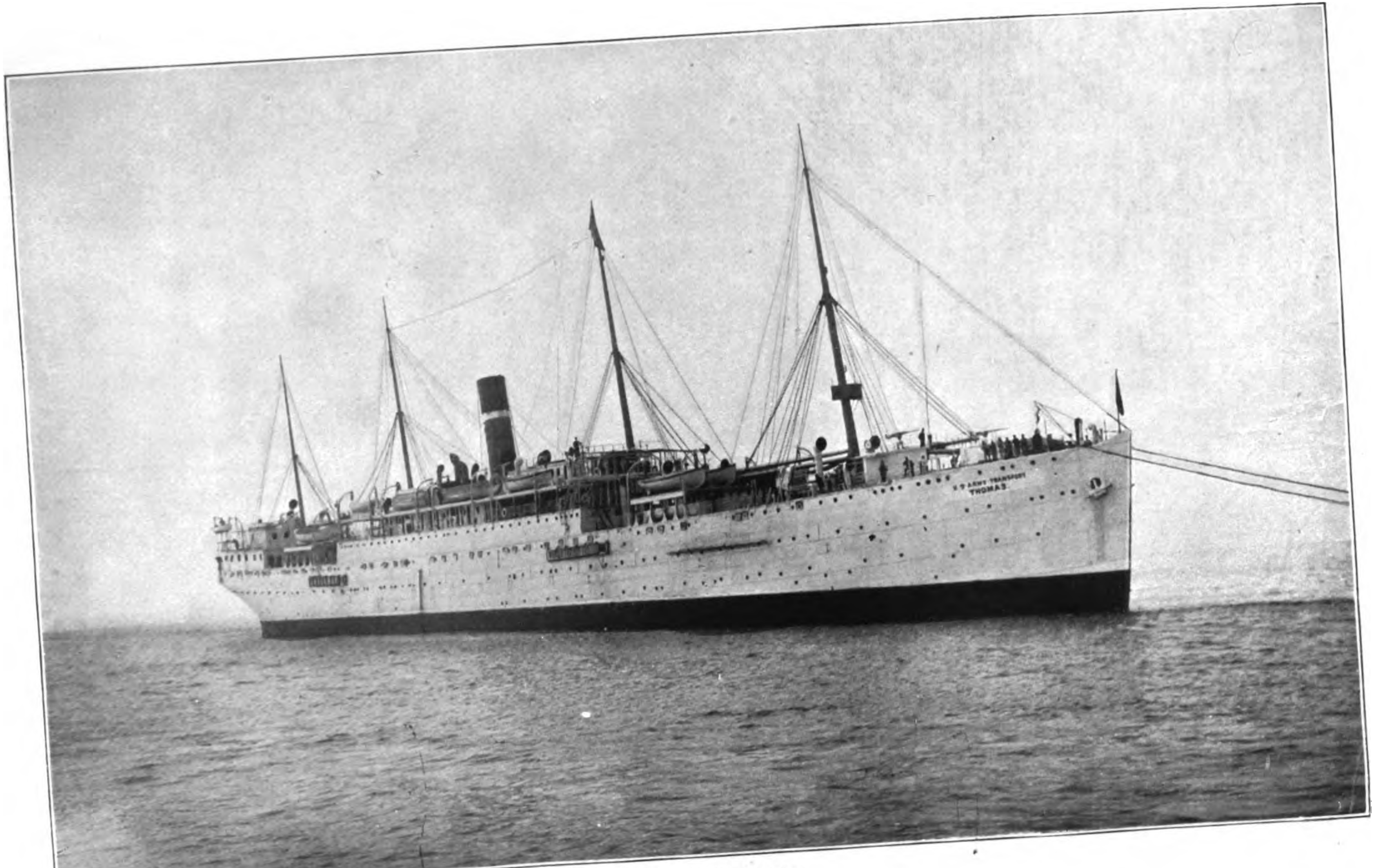
J. Z. Dare,

*Captain and Assistant Quartermaster, U. S. Volunteers.*

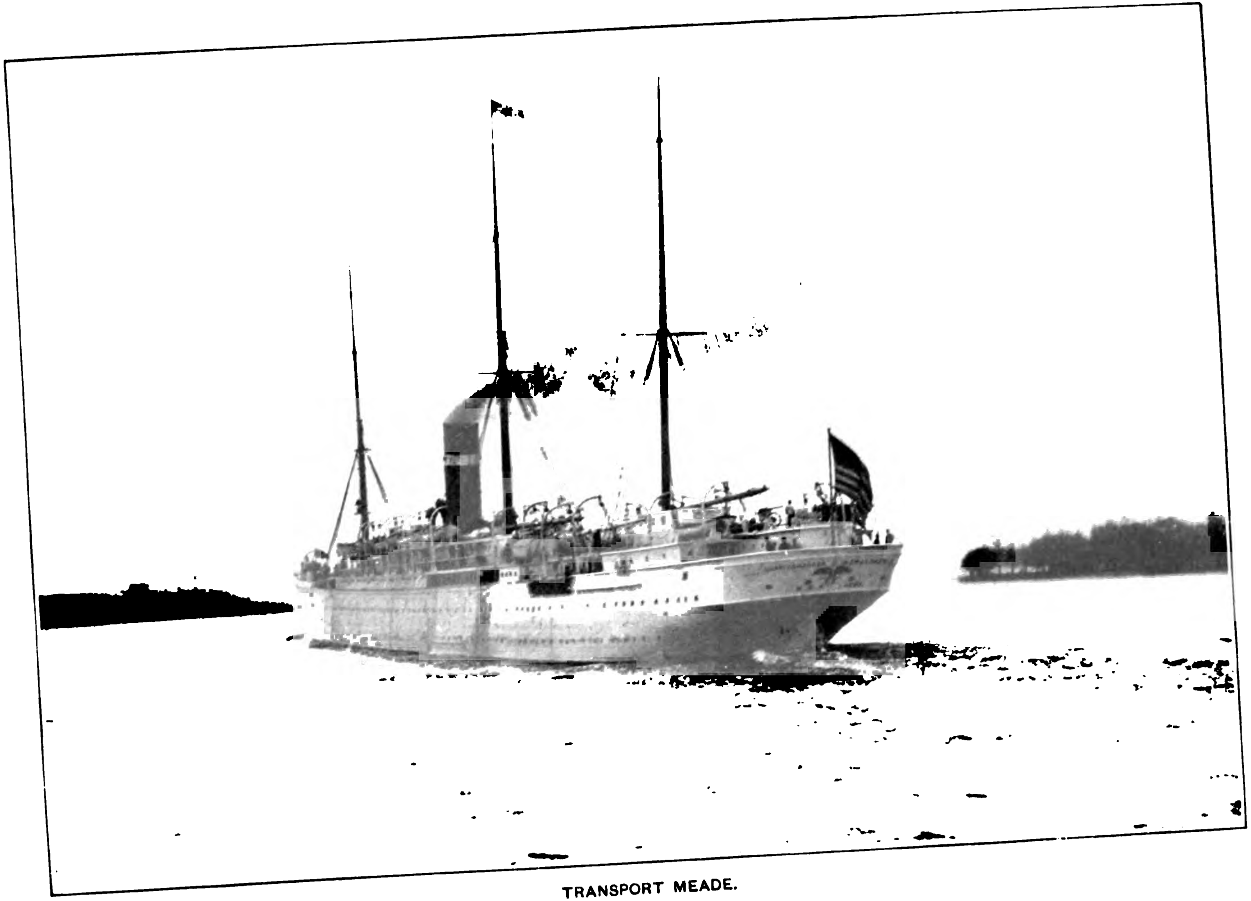
The Quartermaster-General, U. S. A.



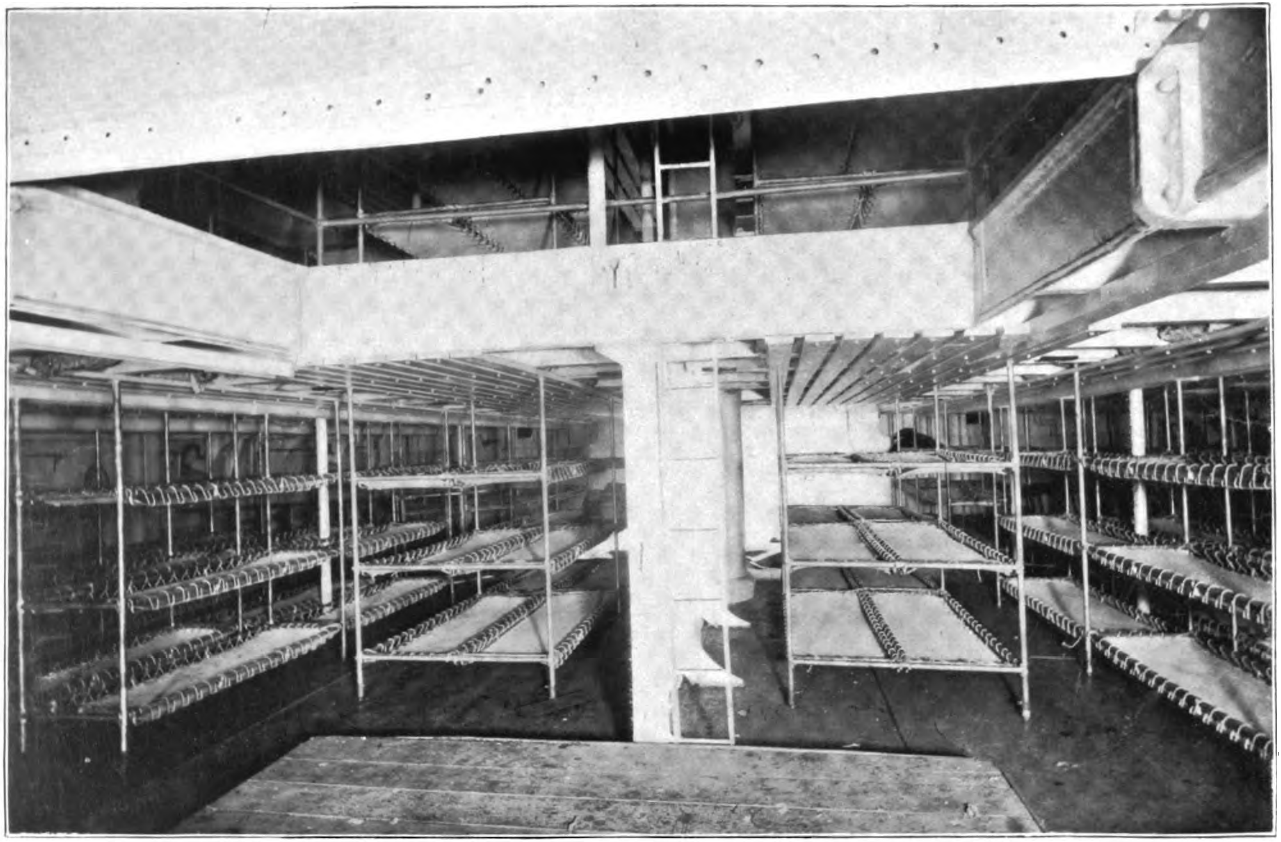
TRANSPORT LOGAN.



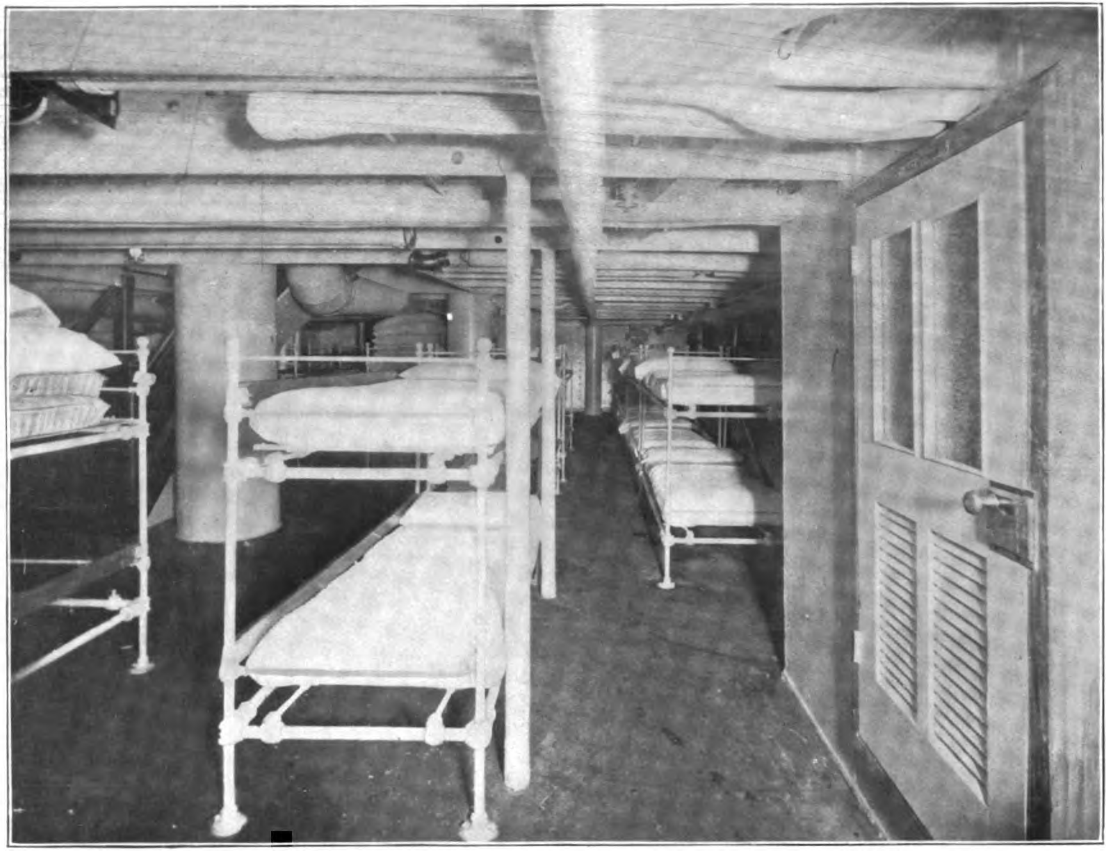
TRANSPORT THOMAS.



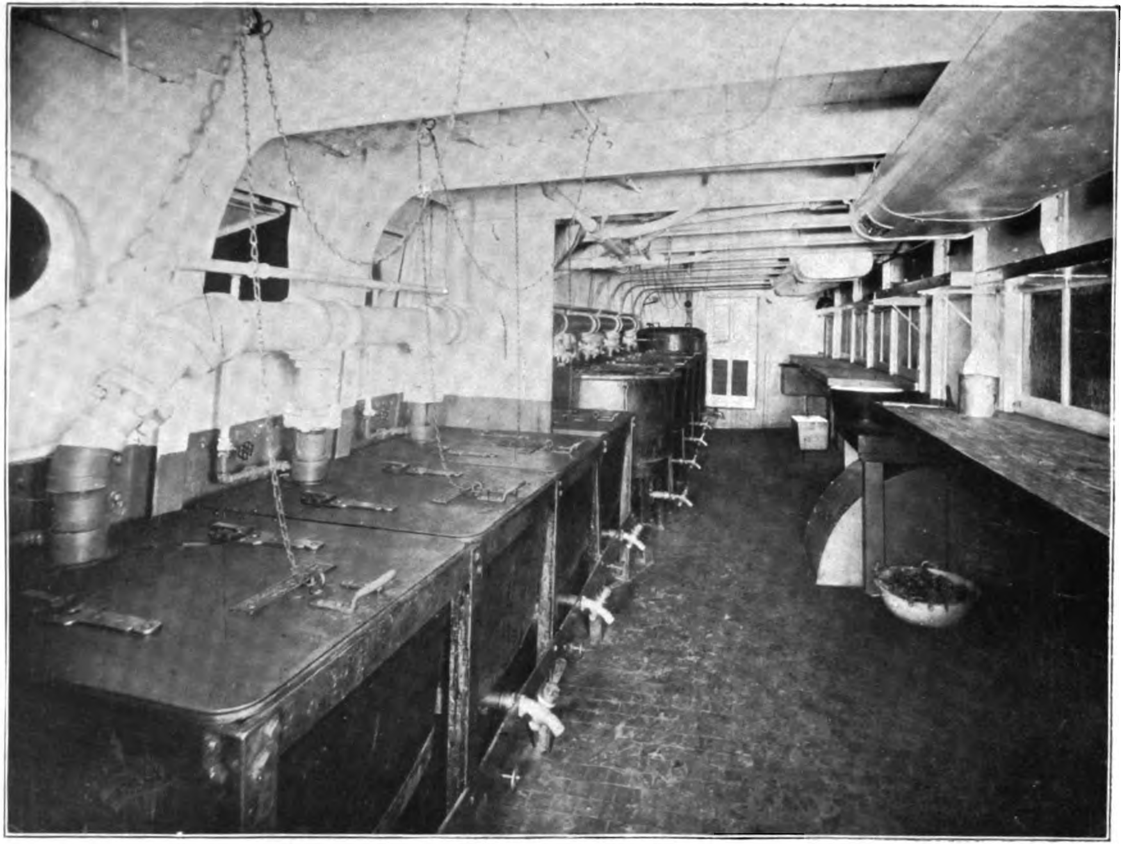
TRANSPORT MEADE.



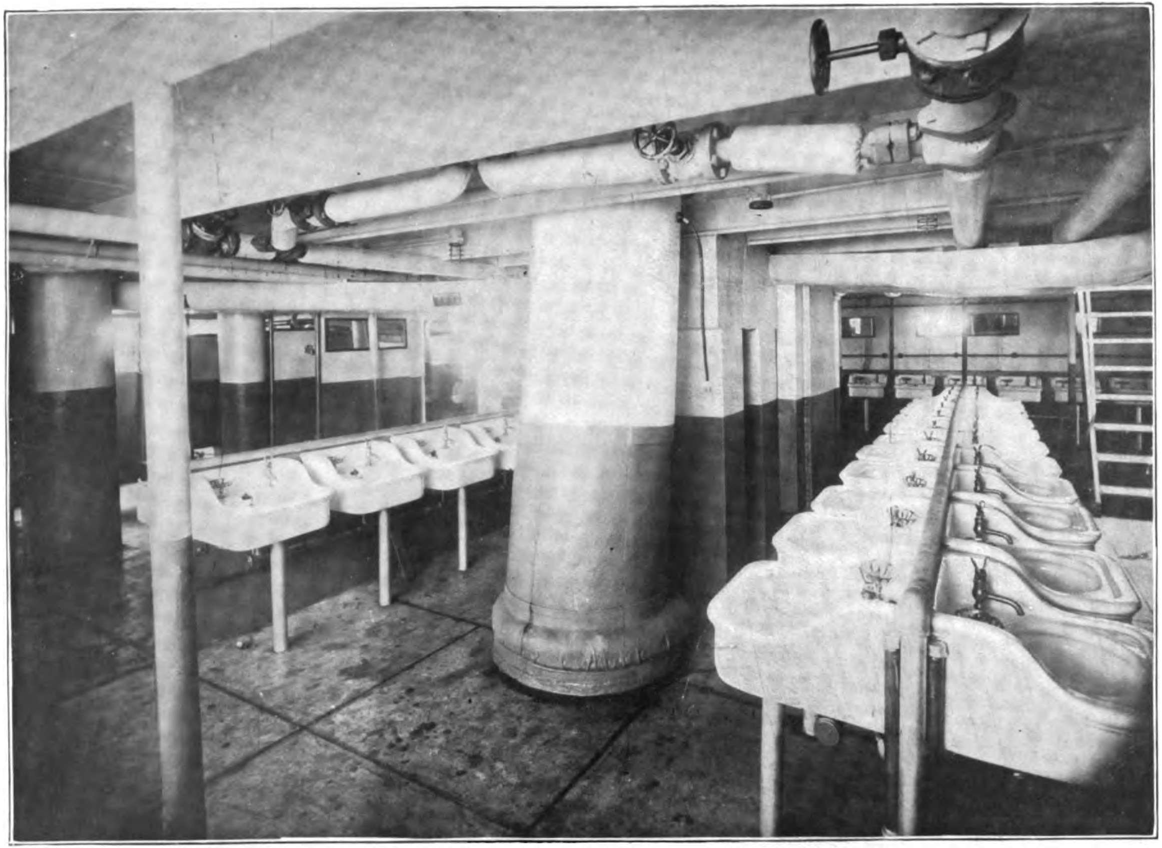
SECTION SHOWING SLEEPING ACCOMMODATIONS FOR TROOPS ON TRANSPORTS.



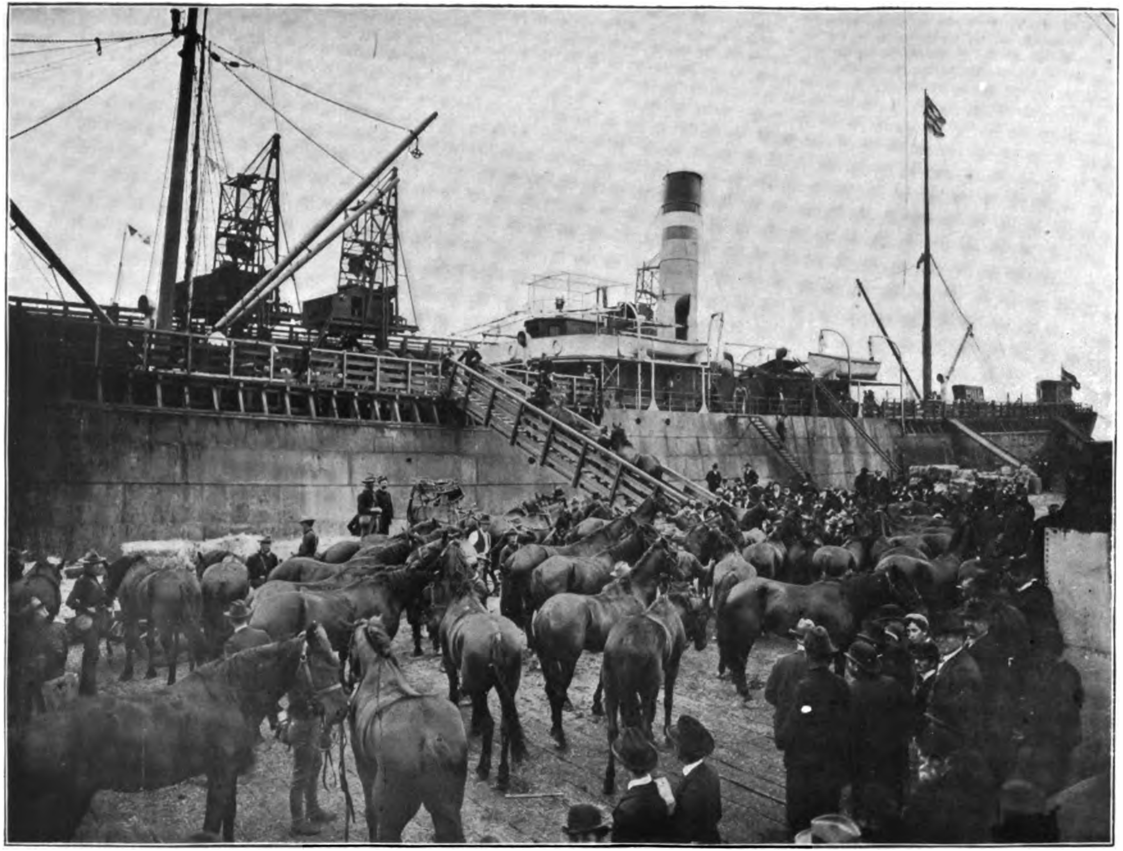
SECTION SHOWING HOSPITAL ACCOMMODATIONS FOR TROOPS ON TRANSPORTS.



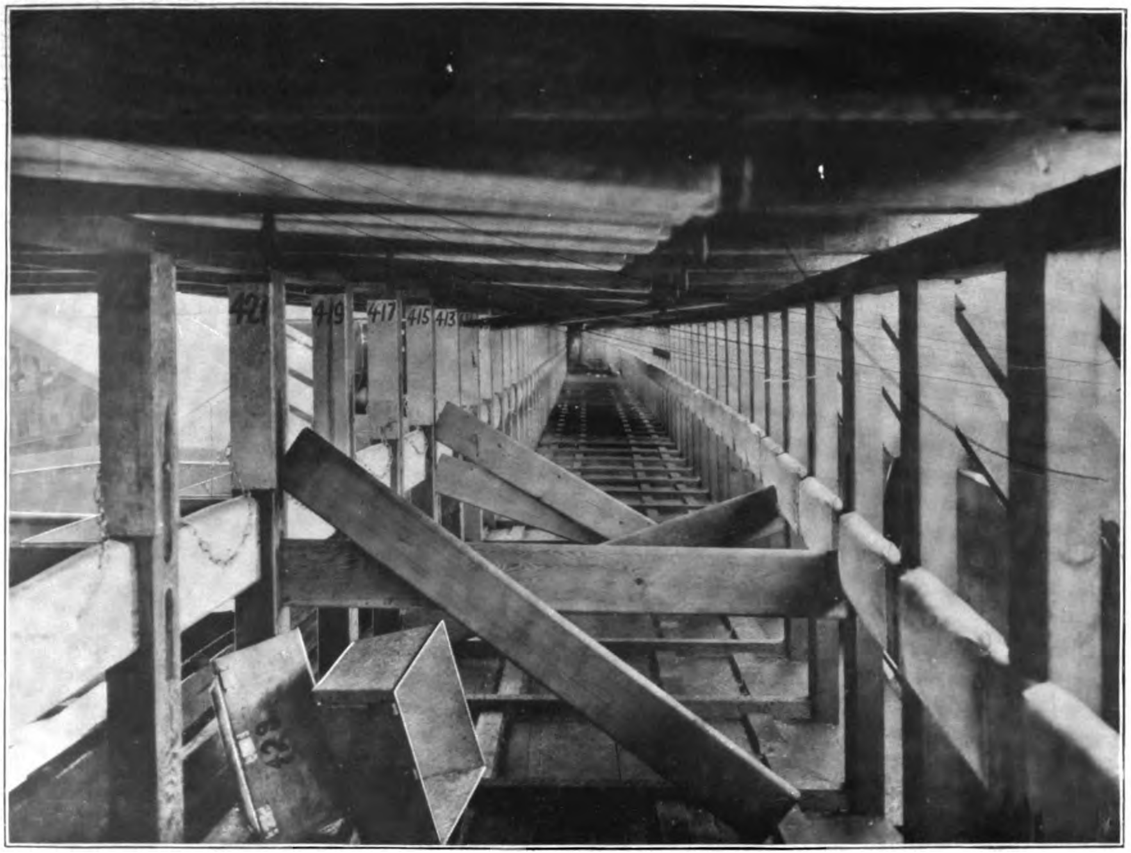
STEAM GALLEY FOR TROOPS ON ARMY TRANSPORTS.



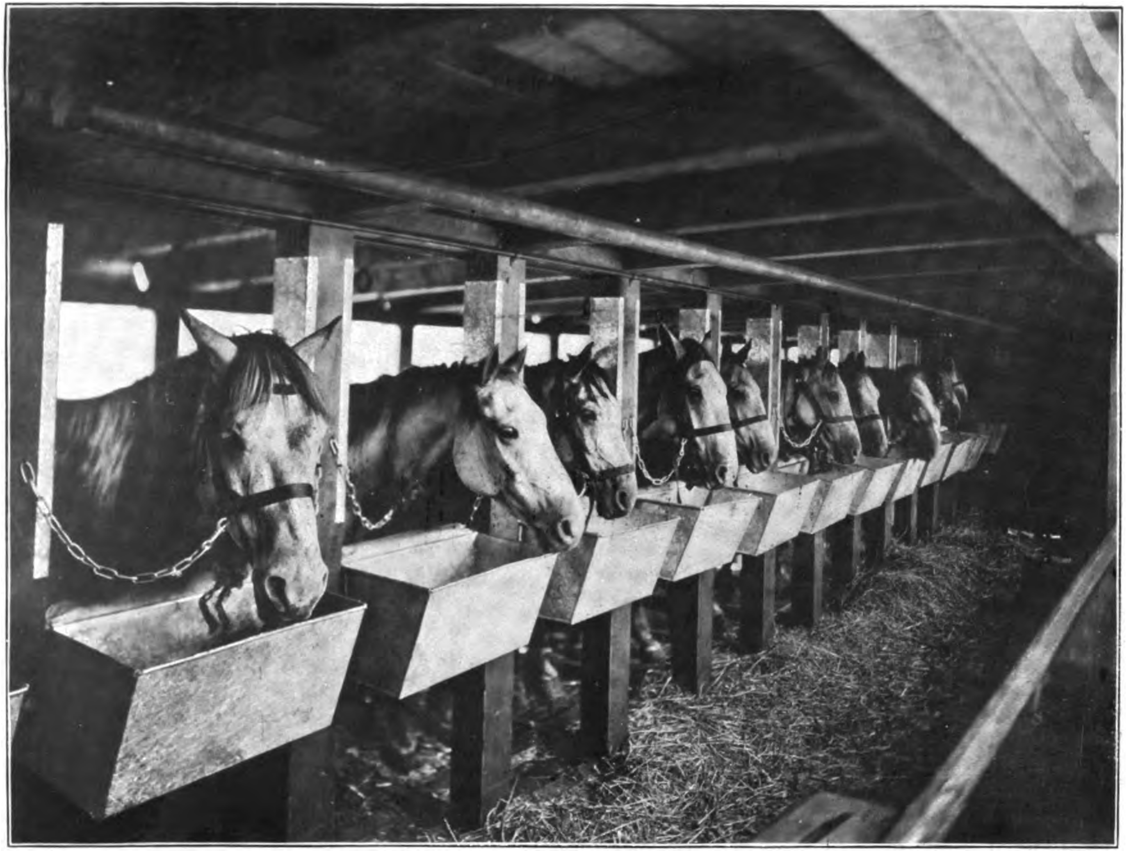
LAVATORY ON ARMY TRANSPORTS.



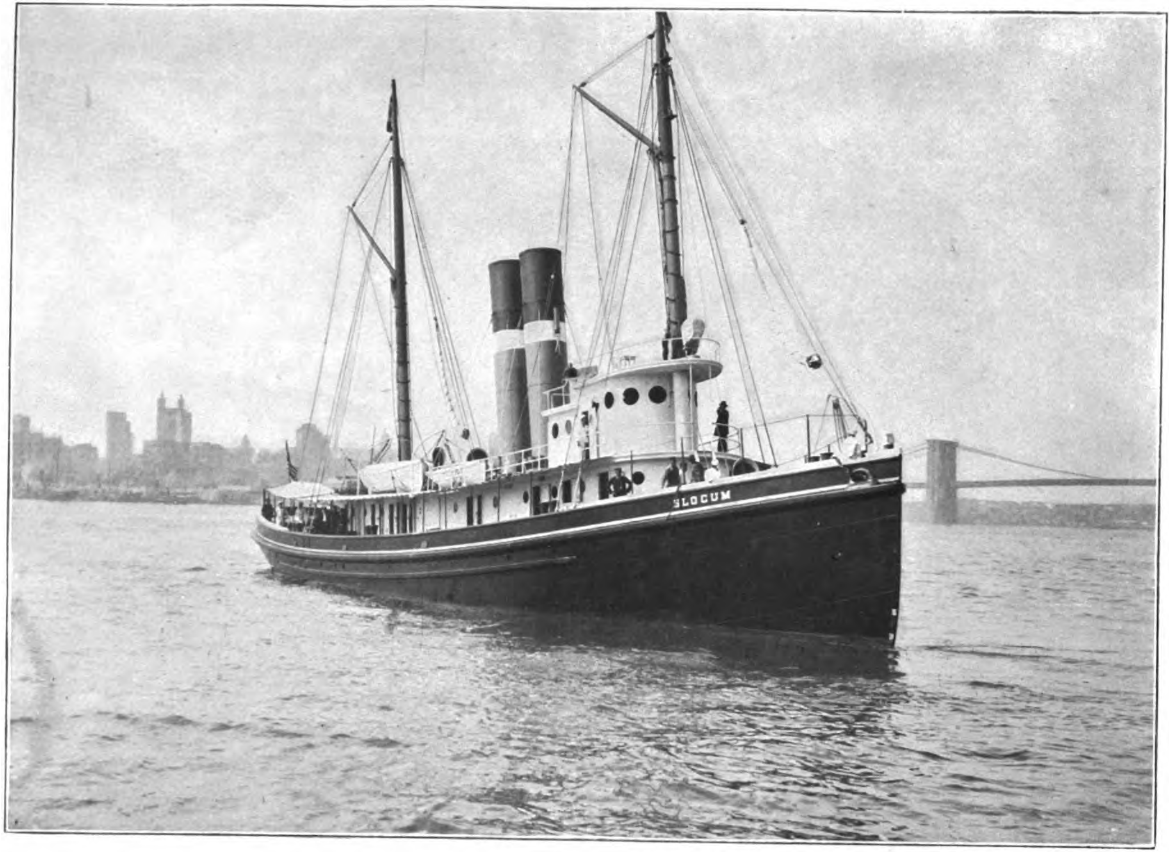
LOADING HORSES FROM WHARF ON ANIMAL TRANSPORT.



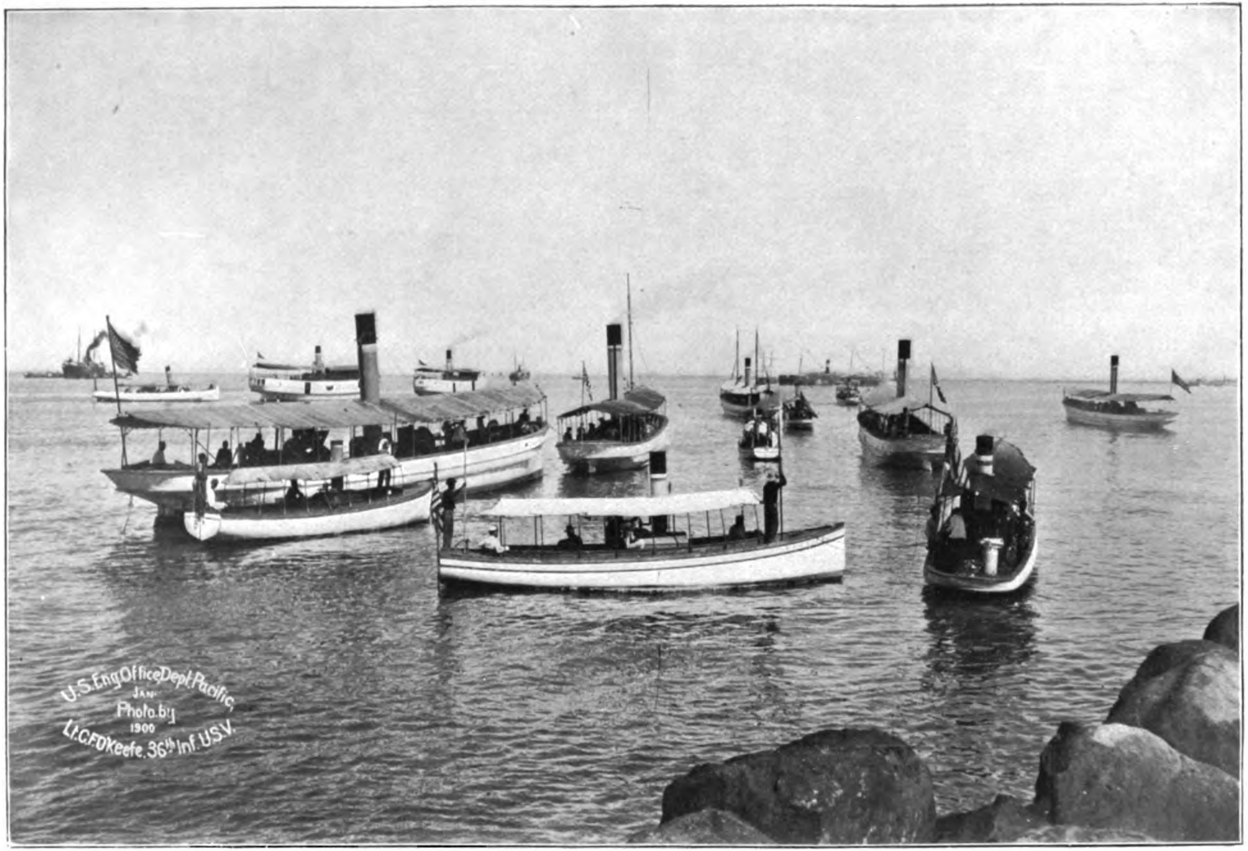
STALLS FOR HORSES AND MULES ON ANIMAL TRANSPORTS.



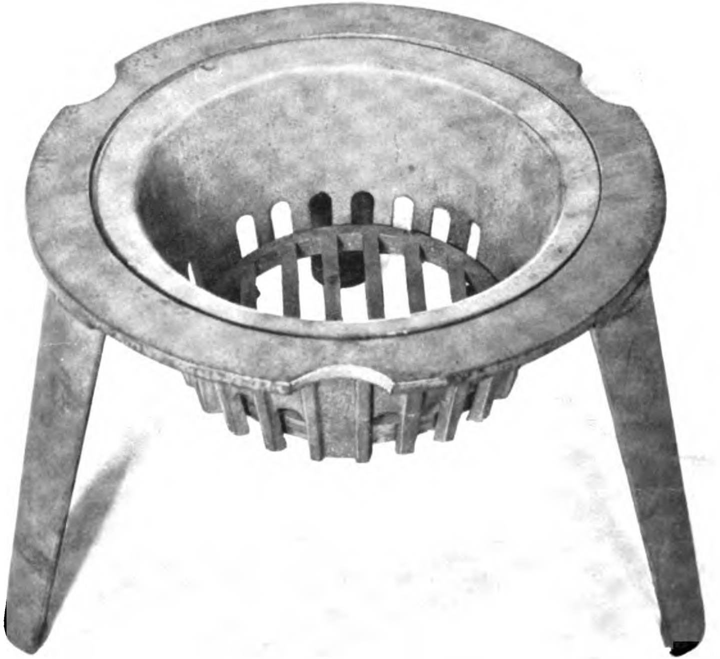
SECTION ON ANIMAL TRANSPORTS, SHOWING HORSES IN THEIR STALLS.



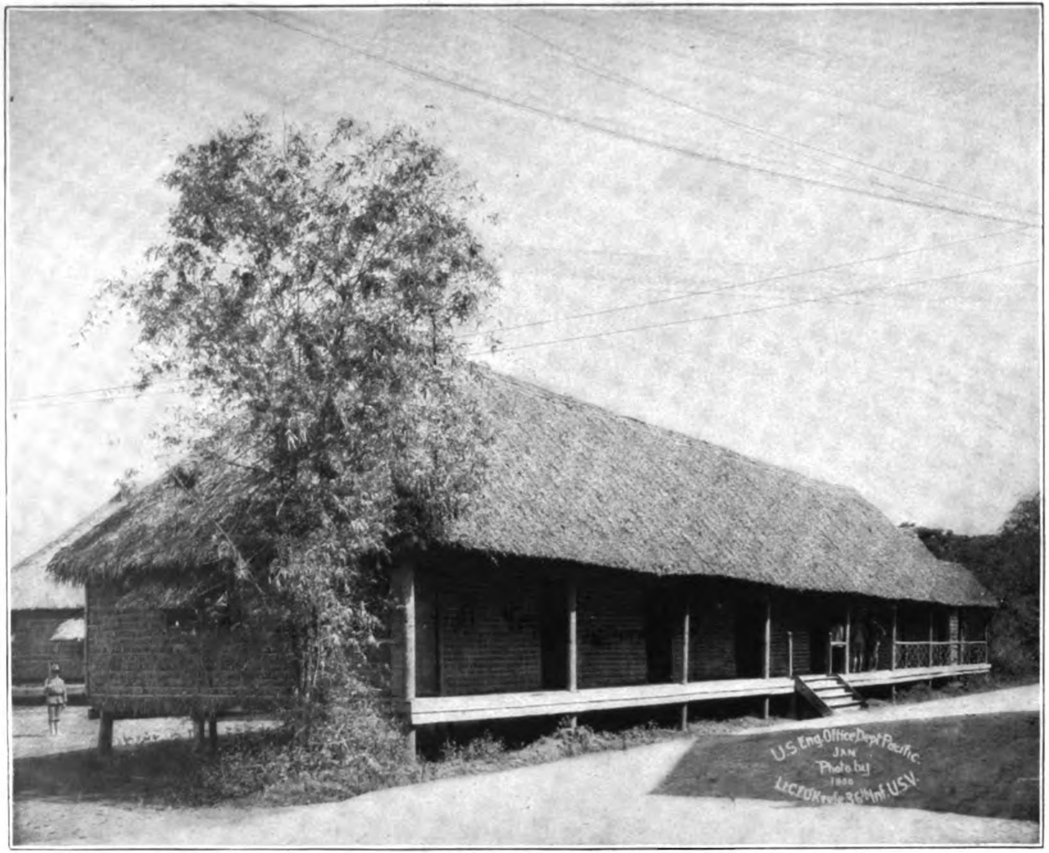
TUG SLOCUM.



QUARTERMASTER STEAM LAUNCHES AND LANDING BOATS IN MANILA BAY, PHILIPPINE ISLANDS.



FIRE POT FOR CONICAL TENT STORES.


U.S. Eng. Office Dept Pacific.
JAN
Photo by
1900
Lt. C. F. O'Keefe 36th Inf. U.S.V.

NIPA BARRACKS, MANILA, PHILIPPINE ISLANDS.

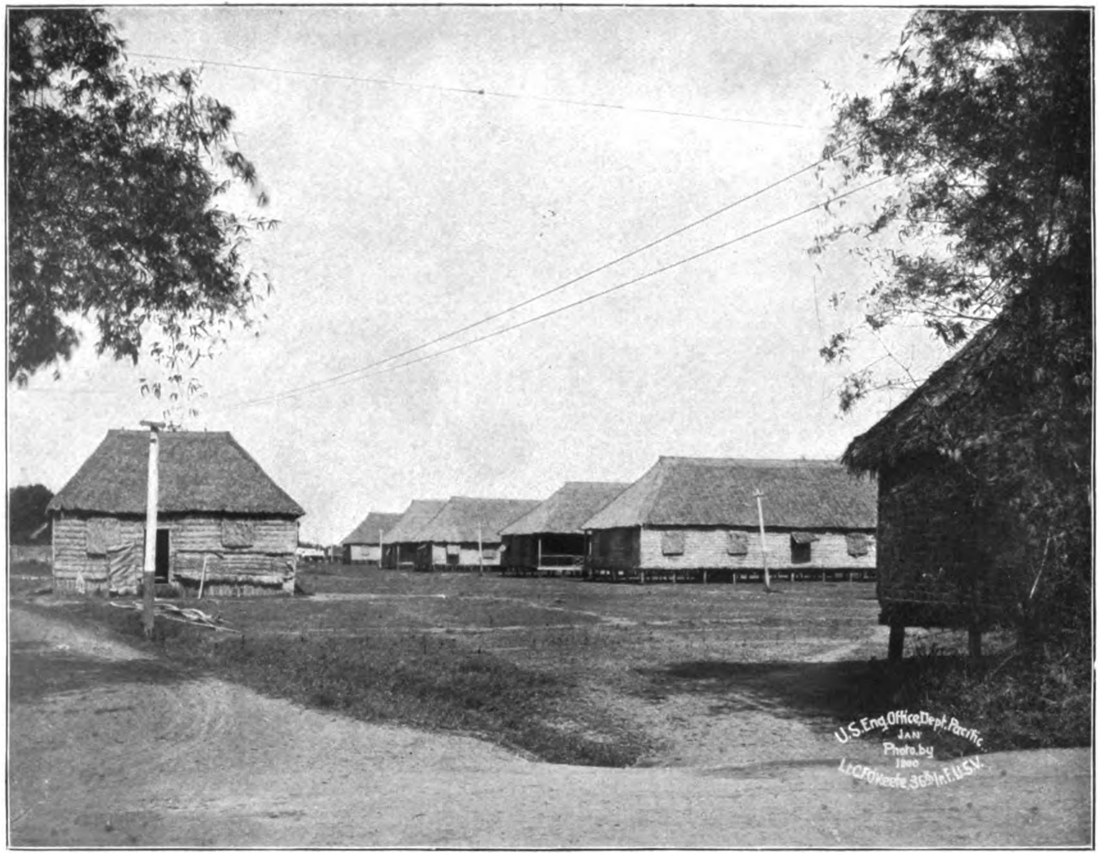

U.S. Eng. Office, Dept. Pacific.
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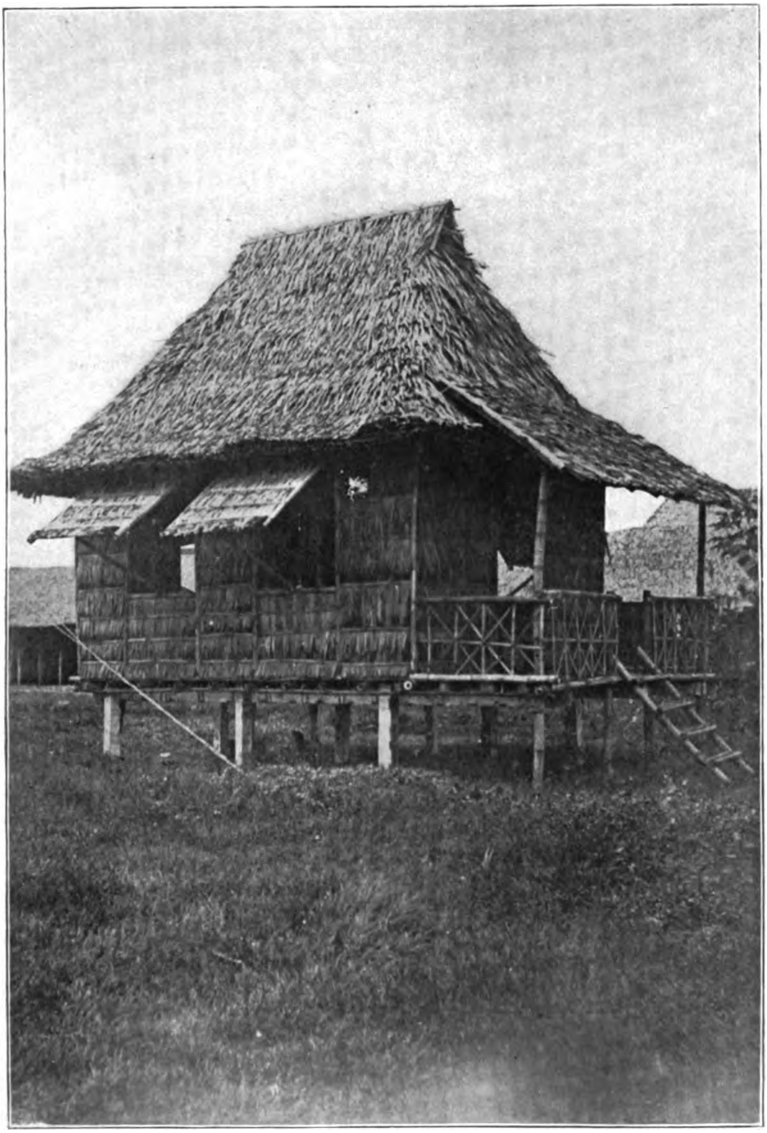
Photo. by
1900
Lt. C. F. O'Keefe, 36th Inf. U.S.V.

NIPA BARRACKS, MANILA, PHILIPPINE ISLANDS.



NIPA QUARTERS FOR TWO OR THREE NONCOMMISSIONED OFFICERS
PHILIPPINE ISLANDS.

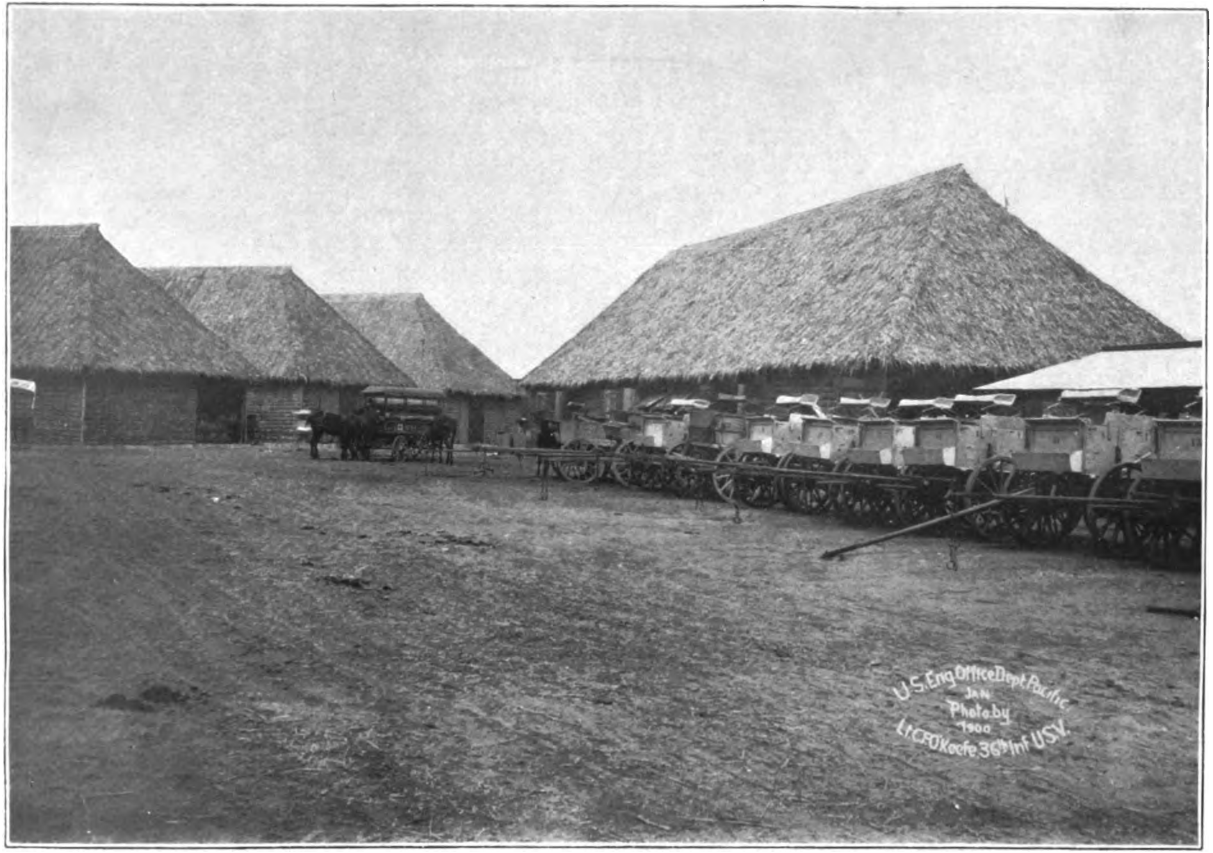

U.S. Eng. Office Dept. Pacific
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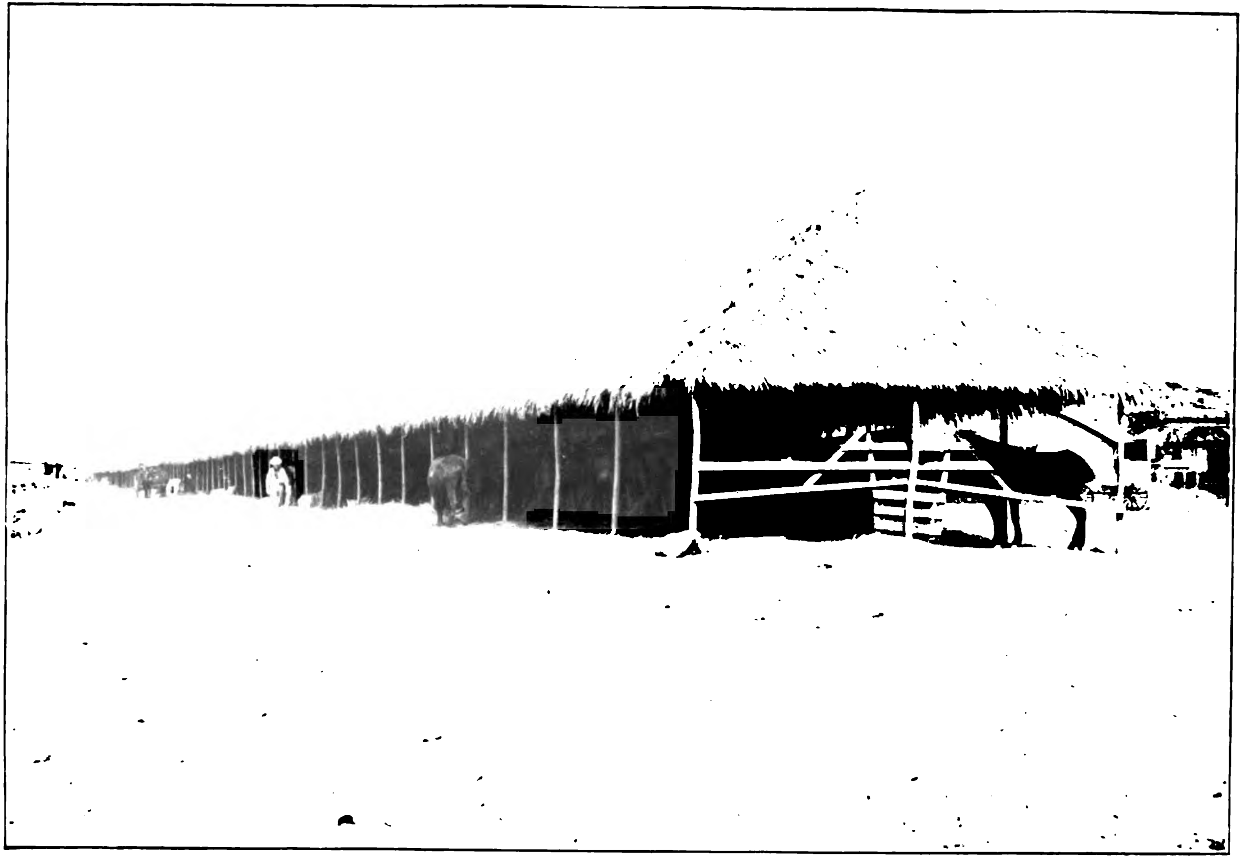
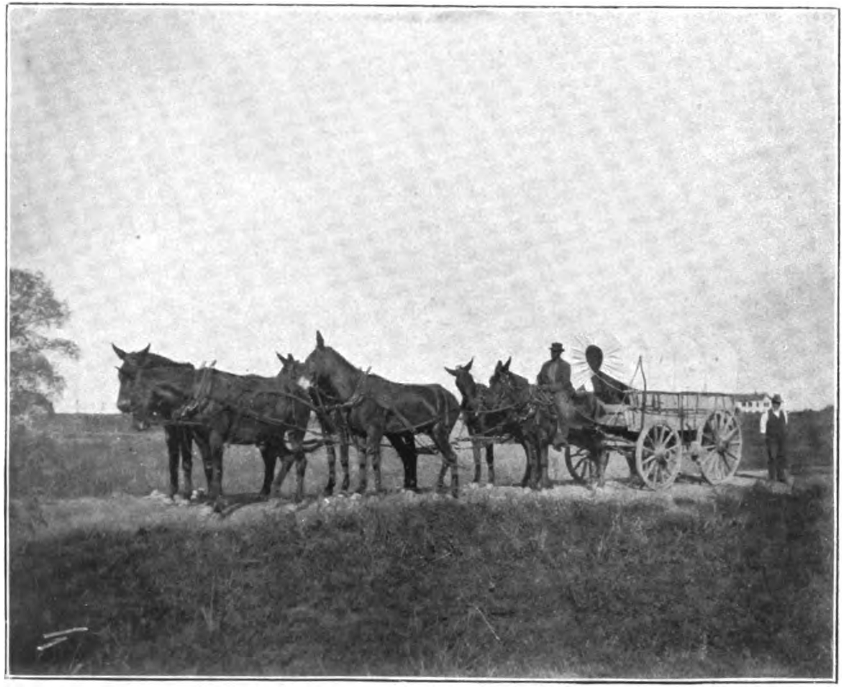
Photo by
1900
Lt. C.F. O'Keefe 36th Inf U.S.V.

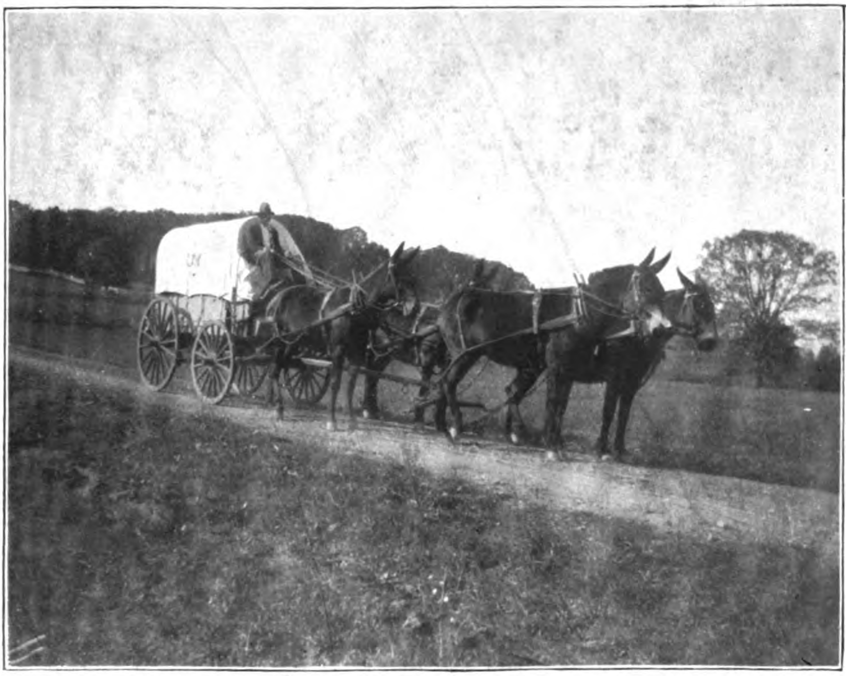
NIPA STORAGE BUILDINGS, QUARTERMASTER'S DEPARTMENT, MANILA, PHILIPPINE ISLANDS.



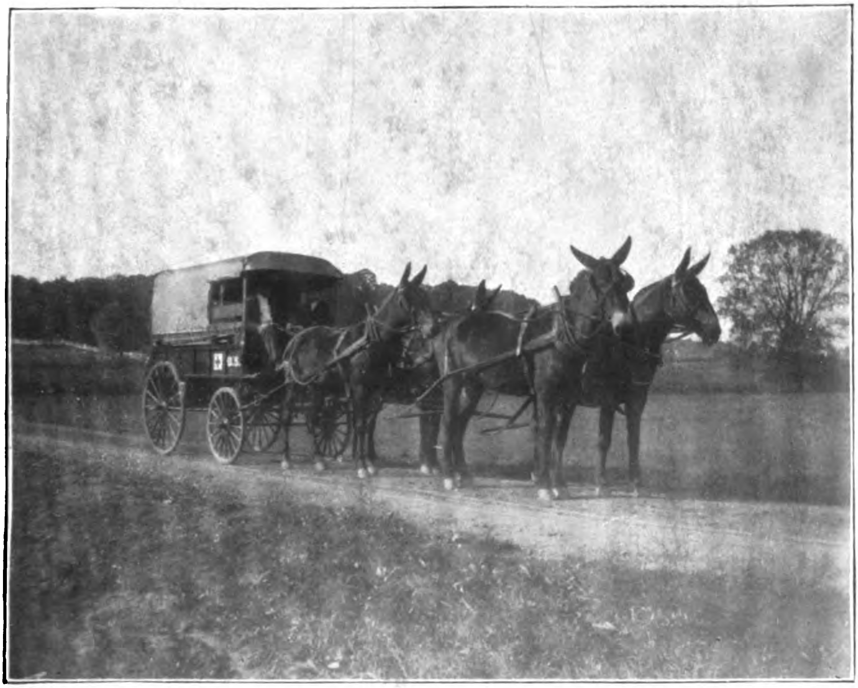
NIPA STABLES, QUARTERMASTER'S DEPARTMENT, MANILA, PHILIPPINE ISLANDS.



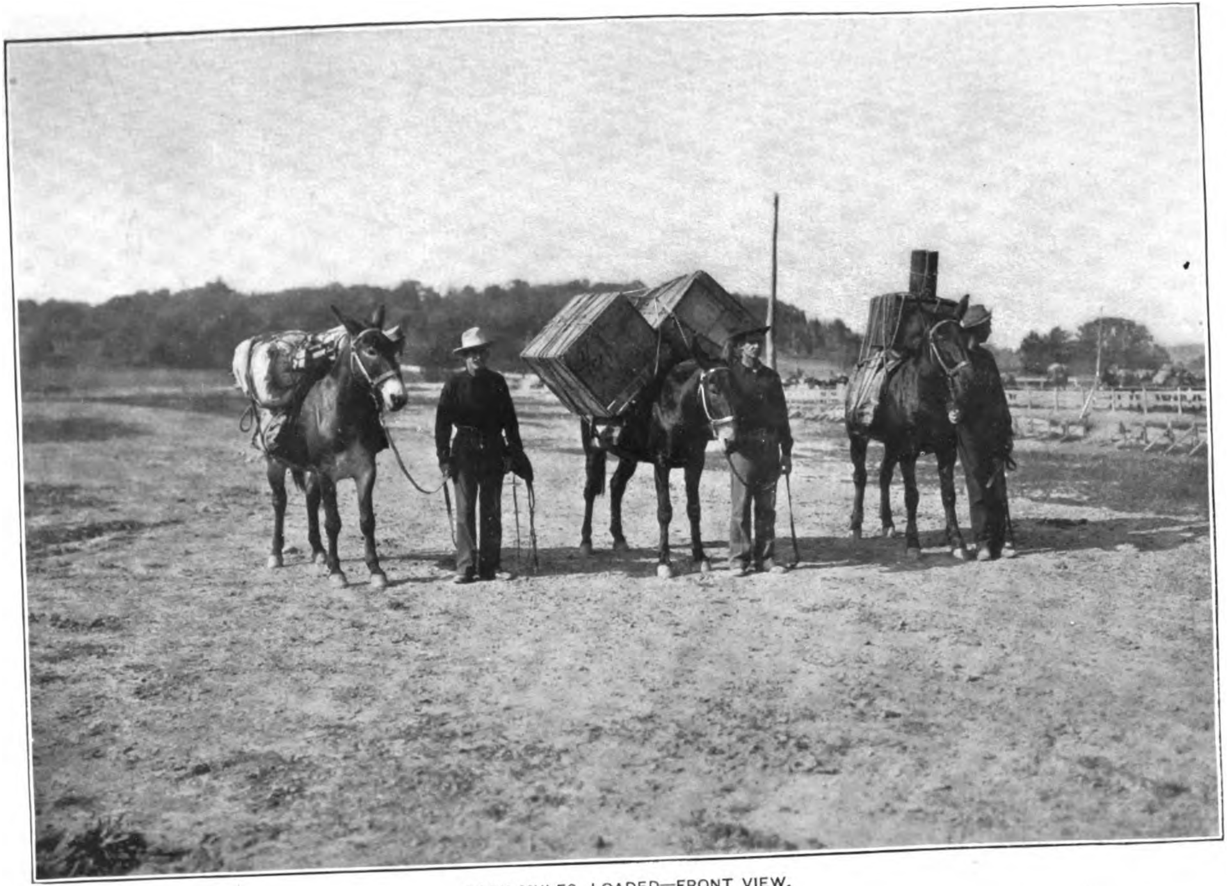
SIX-MULE UNITED STATES ARMY WAGON AND TEAM.



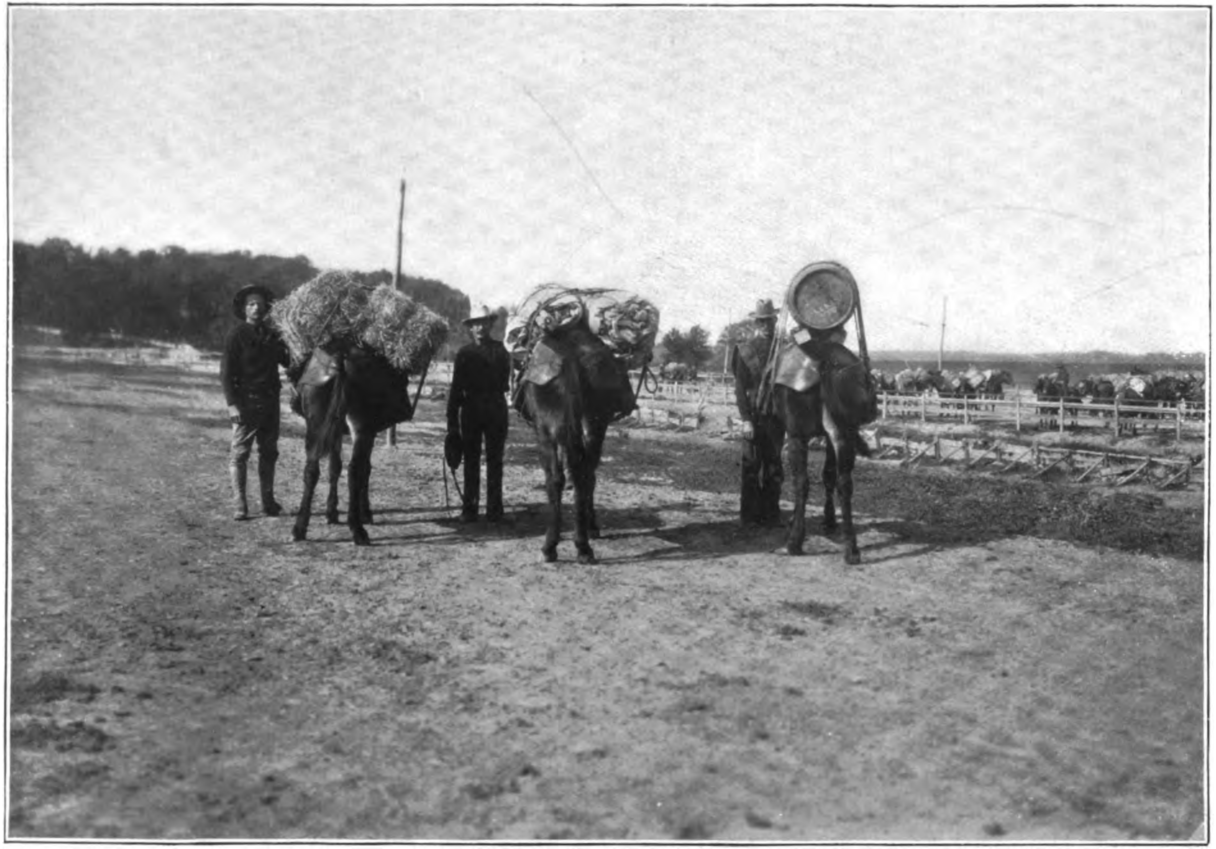
FOUR-MULE ESCORT WAGON AND TEAM.



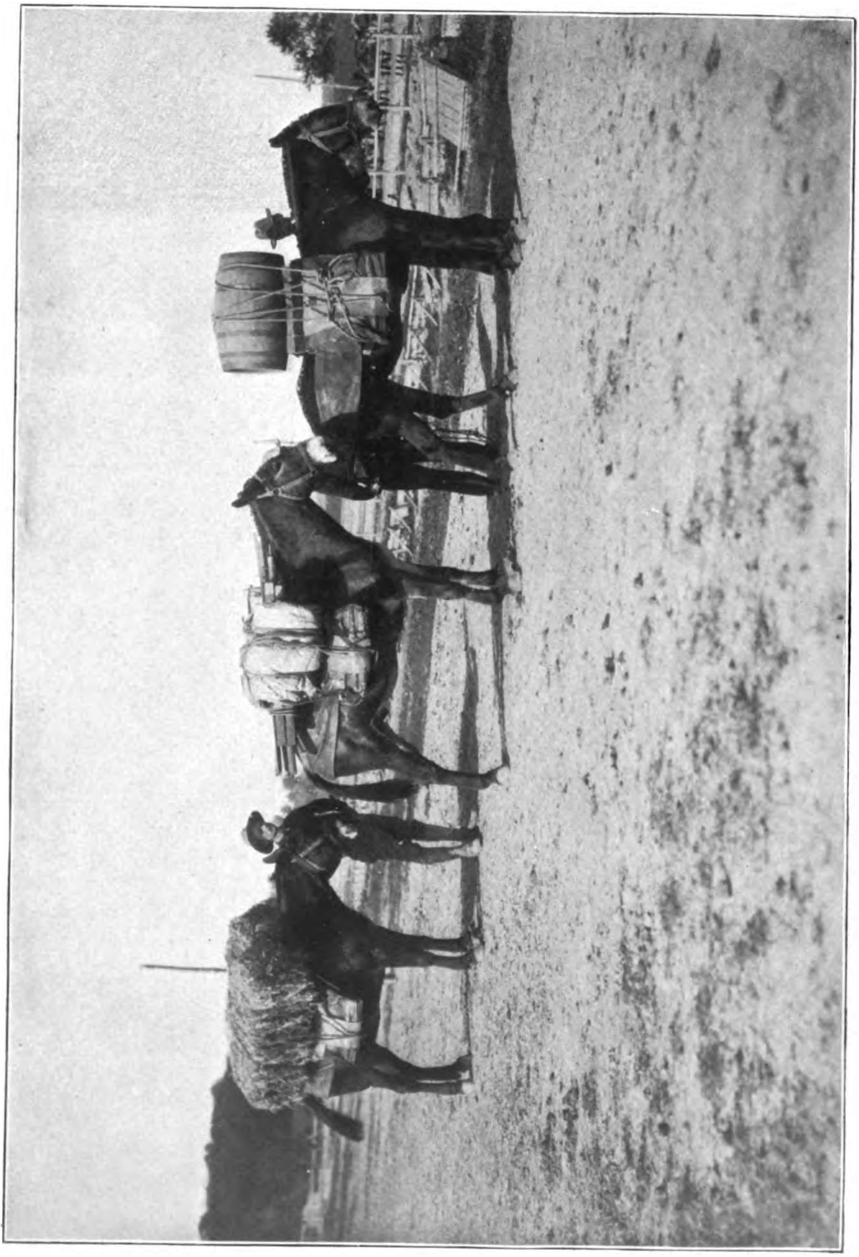
UNITED STATES ARMY AMBULANCE AND TEAM.



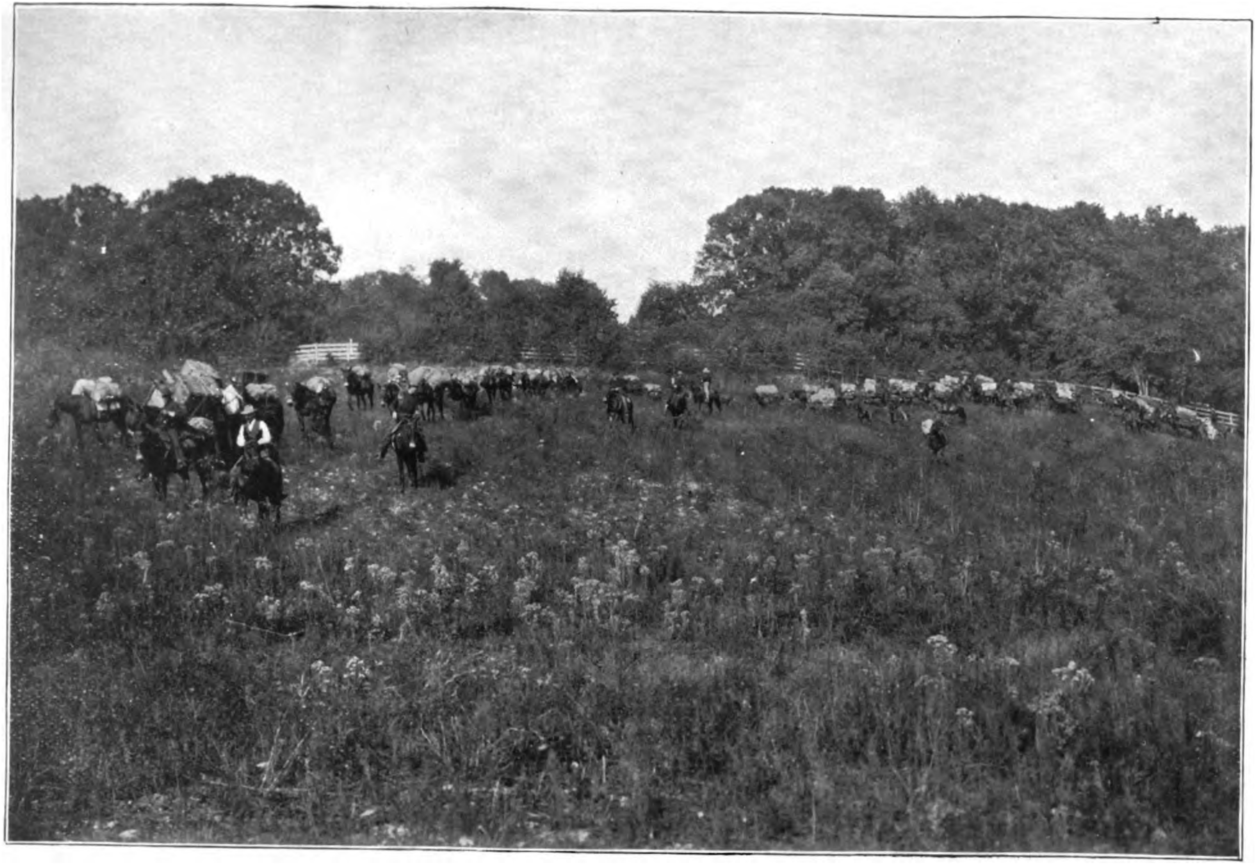
PACK MULES, LOADED—FRONT VIEW.



PACK MULES, LOADED—REAR VIEW.



PACK MULES, LOADED—SIDE VIEW.



PACK TRAIN ON THE MARCH.

# REPORT OF THE ACTING COMMISSARY-GENERAL OF SUBSISTENCE.

# REPORT

### OF THE

# ACTING COMMISSARY-GENERAL OF SUBSISTENCE.

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War Department,
Office Commissary-General of Subsistence,
*Washington, D. C., October 23, 1900.*

Sir: I have the honor to submit the following report of the operations of the Subsistence Department for the fiscal year ending June 30, 1900.

## RESOURCES AND EXPENDITURES.

The following statement exhibits the aggregate fiscal resources and expenditures of the department, and the balances at the close of the fiscal year 1900:

### RESOURCES.

| | | |
|---|---|---|
| Amounts in the Treasury to the credit of the appropriations of the Subsistence Department, June 30, 1899: | | |
| Subsistence of the Army, 1898 | $25,147.31 | |
| Subsistence of the Army, January 1, 1899 | 139,494.59 | |
| Subsistence of the Army, 1899 | 6,661,443.40 | |
| | | $6,826,085.30 |
| Amounts to the credit of officers of the Subsistence Department and of officers doing duty in the Subsistence Department with the Treasurer, assistant treasurers, designated depositaries, and fiscal agents of the Government, and in their personal possession, on June 30, 1899, as follows: | | |
| Subsistence of the Army, 1898 | 2,446.66 | |
| Subsistence of the Army, January 1, 1899 | 351,625.81 | |
| Subsistence of the Army, 1899 | 1,054,507.03 | |
| | | 1,408,579.50 |
| Amounts refunded to the Treasury near close of fiscal year 1899, since carried to the credit of the appropriations, as follows: | | |
| Subsistence of the Army, 1898 | 413.41 | |
| Subsistence of the Army, January 1, 1899 | 62,618.63 | |
| Subsistence of the Army, 1899 | 239,697.36 | |
| | | 302,729.40 |
| Amounts appropriated for the subsistence of the Army for the fiscal year ending June 30, 1900, as follows: | | |
| Subsistence of the Army, 1900, act March 3, 1899 | 9,752,621.09 | |
| Subsistence of the Army, 1897, deficiency act June 6, 1900 | 12.50 | |
| | | 9,752,633.59 |
| Amount erroneously dropped in last annual report, as carried to the surplus fund, June 30, 1899, now taken up: | | |
| Relief of sufferers from overflow of Mississippi River and its tributaries and Red River of the North, act April 7, 1897 | | 123,963.73 |

| | | |
|---|---|---|
| Transfer from subsistence of the Army, 1899, to subsistence of the Army, 1900, deficiency act February 9, 1900 | | $4,000,000.00 |
| Amounts collected from various sources and refunded to the appropriations of the Subsistence Department on the books of the Treasury, during fiscal year 1900, as follows: | | |
| Subsistence of the Army, 1897, and prior years | $16.02 | |
| Subsistence of the Army, 1898 | 8,818.30 | |
| Subsistence of the Army, January 1, 1899 | 56,260.85 | |
| Subsistence of the Army, 1899 | 39,386.93 | |
| Subsistence of the Army, 1900 | 423,340.75 | 527,822.85 |
| Amounts charged against officers still in the service, on account of funds and stores alleged to have been lost by theft, etc., for which relief can only be obtained in the Court of Claims, under sections 1059 and 1062, Revised Statutes, or from Congress, as follows: | | |
| Subsistence of the Army, 1880 | 75.92 | |
| Subsistence of the Army, 1889 | 24.04 | |
| Subsistence of the Army, January 1, 1899 | 195.18 | |
| Subsistence of the Army, 1899 | 848.27 | 1,143.41 |
| Amounts received by officers of the Subsistence Department and by officers doing duty in the Subsistence Department from sales of subsistence stores to the following purchasers during the fiscal year 1900, and taken up for immediate disbursement, under the following appropriations: | | |
| Subsistence of the Army, 1898: Sales to officers | 106.89 | |
| Subsistence of the Army, January 1, 1899: Sales to officers, $311.65; to enlisted men, companies, detachments, and hospitals, $241.93 | 553.58 | |
| Subsistence of the Army, 1899: Sales to officers, $71.09; to enlisted men, companies, detachments, and hospitals, $819.57; unclassified sales, $843.04; for meals on transports, $831 | 2,564.70 | |
| Subsistence of the Army, 1900: Sales to officers, $685,077.34; to enlisted men, companies, detachments, and hospitals, $1,526,732.71; to civilian employees, $84,815.45; at auction, stores, $52,353.96; at auction, property, $451.68; to destitute flood sufferers, $2,214.86; of boxes, barrels, etc., $2,679.53; of garden seeds, etc., $54.35; to Quartermaster's Department, $1,043.43; to post exchange, $114,100.90; to Indians, $1,085.35; for meals on transports, $114,767.96; to naval officers and enlisted men, $28,604.12; to United States Boundary Commission, $77.10; unclassified sale collections, $25,402.79; to bakery, $10.05; to Indian agents and employees, $2,643.86; to Cuban rural police, $830.31; to patients in hospitals, $4.40; Cuban rations, $79,279.04; special sales, $5,099.49 | 2,727,328.68 | 2,730,553.85 |
| Amounts taken up by officers doing duty in the Subsistence Department, on account of reclamations for stores lost, damaged, etc.; in correction of errors in their accounts, etc., as follows: | | |
| Subsistence of the Army, 1898 | 2.02 | |
| Subsistence of the Army, January 1, 1899 | 100.00 | |
| Subsistence of the Army, 1899 | 488.32 | |
| Subsistence of the Army, 1900 | 8,823.27 | 9,413.61 |
| Amount taken up by officers as gains—Subsistence of the Army, 1900 | | 1,314.12 |
| Total resources | | 25,684,239.36 |

## EXPENDITURES.

| | | |
|---|---|---|
| Amounts expended on the books of the Treasury from the appropriations of the Subsistence Department during the fisal year 1900, as follows: | | |
| Subsistence of the Army, 1897 | $12.50 | |
| Subsistence of the Army, 1898 | 839.50 | |
| Subsistence of the Army, January 1, 1899 | 113,017.10 | |
| Subsistence of the Army, 1899 | 1,111,136.00 | |
| Subsistence of the Army, 1900 | 112,833.45 | |
| Relief of sufferers from overflow of the Mississippi River and its tributaries and Red River of the North, joint resolution approved April 7, 1897 | 1.67 | |
| | | $1,337,840.22 |
| Amounts disbursed by officers of the Subsistence Department and officers doing duty in the Subsistence Department during the fiscal year 1900, as follows: | | |
| Subsistence of the Army, 1898 | 936.22 | |
| Subsistence of the Army, January 1, 1899 | 30,536.37 | |
| Subsistence of the Army, 1899 | 336,410.77 | |
| Subsistence of the Army, 1900 | 12,456,310.24 | |
| | | 12,824,193.60 |
| Amounts dropped by officers doing duty in the Subsistence Department in correction of errors in their accounts during the fiscal year 1900, as follows: | | |
| Subsistence of the Army, January 1, 1899 | 1.28 | |
| Subsistence of the Army, 1899 | 209.50 | |
| Subsistence of the Army, 1900 | 3,506.02 | |
| | | 3,716.80 |
| Amounts lost by defalcation of officer: | | |
| Subsistence of the Army, 1899 | 1,878.99 | |
| Subsistence of the Army, 1900 | 2,181.68 | |
| | | 4,060.67 |
| Amounts carried to the surplus fund on June 30, 1900, act June 20, 1874: | | |
| Subsistence of the Army, 1897, and prior years | 16.02 | |
| Subsistence of the Army, 1898 | 33,943.27 | |
| | | 33,959.29 |
| Amount transferred from subsistence of the Army, January 1, 1899, to pay of the Army, 1900, urgent deficiency act, February 9, 1900 | 368,000.00 | |
| Amount transferred from subsistence of the Army, 1899, to pay of the Army, 1900, urgent deficiency act, February 9, 1900 | 2,000,000.00 | |
| Amount transferred from subsistence of the Army, 1899, to subsistence of the Army, 1900, urgent deficiency act, February 9, 1900 | 4,000,000.00 | |
| | | 6,368,000.00 |
| Total expenditures | | 20,571,770.58 |

## BALANCES.

| | | |
|---|---|---|
| Amounts in the Treasury to the credit of the appropriations of the Subsistence Department, June 30, 1900: | | |
| Subsistence of the Army, January 1, 1899 | $58,873.41 | |
| Subsistence of the Army, 1899 | 502,835.79 | |
| Subsistence of the Army, 1900 | 3,197,711.65 | |
| Relief of sufferers from overflow of Mississippi River and its tributaries and Red River of the North, act April 7, 1897 | 123,962.06 | |
| | | $3,883,382.91 |

| | | |
|---|---|---|
| Amounts to the credit of officers of the Subsistence Department and of officers doing duty in the Subsistence Department with the Treasurer, assistant treasurers, designated depositaries and fiscal agents of the Government, and in their personal possession on June 30, 1900, as follows: | | |
| Subsistence of the Army, 1898 | $1,215.60 | |
| Subsistence of the Army, January 1, 1899 | 26,034.54 | |
| Subsistence of the Army, 1899 | 44,362.54 | |
| Subsistence of the Army, 1900 | 1,096,264.30 | |
| | | $1,167,876.98 |
| Amounts refunded to the Treasury near close of fiscal year 1900, but not carried to the credit of the appropriations by June 30, 1900, as follows: | | |
| Subsistence of the Army, January 1, 1899 | 13,995.58 | |
| Subsistence of the Army, 1899 | 1,449.33 | |
| Subsistence of the Army, 1900 | 44,431.51 | |
| | | 59,876.42 |
| Amounts charged against officers on account of funds alleged to have been lost by theft, etc., for which relief can only be obtained in the Court of Claims, under sections 1059 and 1062, Revised Statutes, or from Congress, as follows: | | |
| Officers still in service: | | |
| Subsistence of the Army, 1880 | 75.92 | |
| Subsistence of the Army, 1889 | 24.04 | |
| Subsistence of the Army, 1899 | 308.27 | |
| Subsistence of the Army, 1900 | 189.06 | |
| Officers out of service: | | |
| Subsistence of the Army, January 1, 1899 | 195.18 | |
| Subsistence of the Army, 1899 | 540.00 | |
| | | 1,332.47 |
| Total balances | | 5,112,468.78 |

In the expenditures above reported for the fiscal year 1900 the following items of disbursements are included, viz:

Commutation of rations to enlisted men stationed where rations can not be conveniently issued, $165,801.75; commutation of rations to ordnance sergeants at posts not garrisoned, $3,556.33; commutation of rations to enlisted men on furlough, $41,012.83; commutation of rations to enlisted men while traveling, $67,127.60; meals for recruiting parties and recruits and troops moving, $194,227.87; liquid coffee for troops traveling, $49,189.06; advertising, $3,906.10; printing, $1,065.39; rent of telephones, $1,585.02; commercial newspapers, $16.80; 44,370,519 pounds of ice for issue to troops and refrigerating purposes, $112,891.62.

## HOSPITAL ISSUES.

The supplies purchased and issued from stock on hand during the fiscal year, for enlisted men in hospital too sick to use the army ration, amounted in value to $537,210.55. Issues of articles differing from the articles of the ration to enlisted men in camp during periods of low condition of health consequent upon service in unhealthy regions or in debilitating climates were not made until near the close of the fiscal year, and did not amount to very much in money value.

## LOSSES OF SUBSISTENCE STORES IN OCEAN TRANSPORTATION.

Considerable losses of subsistence stores occurred during the calendar year 1899 in shipments made from San Francisco to Manila. Upon urgent presentation of the facts to the appropriate authorities the proper remedies were applied, and causes of complaints of this character thereafter ceased to a marked degree.

The subsistence stores and property reported as damaged and lost from natural and other causes on vessels of the entire transport service during the fiscal year 1900 amounted in value to $184,392.01. There has been collected from persons responsible for the preventable losses and from the sales of damaged stores the sum of $22,230.50.

In addition to the above, a great loss of subsistence stores occurred by marine disaster to the steamer *Morgan City*, which sailed from San Francisco August 10, 1899, for Nagasaki, Japan. The vessel struck on a rock in the Inland Sea on September 3, 1899, and it and the cargo became a total loss. The subsistence stores aboard amounted to 508 tons in weight. Upon telegraphic information of the loss these stores were ordered to be duplicated from New York and San Francisco on September 6, 1899.

### OTHER LOSSES OF STORES AND PROPERTY.

The value of the supplies lost by accident, by wastage in transportation, while in store, etc., during the year, for which no one was held responsible, as shown by returns thus far examined, was $68,028.52.

Like losses which occured during the preceding fiscal year, but which were not included in annual report for that year, amounted to $55,266.66.

Supplies lost during the year, the responsibility for which was fixed upon the proper parties as shown by returns thus far examined, amounted to $10,010.80; of which $1,654.63 has been reported as collected, leaving still to be collected $8,356.17.

### SALES OF CONDEMNED STORES AND PROPERTY.

From the returns thus far received and examined the stores condemned and sold in the fiscal year ended June 30, 1900, are shown to have been as follows:

| | Subsistence stores condemned. |
|---|---|
| Original cost of stores condemned | $298,164.79 |
| Amount realized from sales of such as were ordered sold | 102,362.46 |
| Loss | 195,802.33 |

From sales of condemned subsistence property there was realized the sum of $451.68.

### SALES ON CREDIT TO OFFICERS AND ENLISTED MEN.

Sales on credit to officers of both the Regular and Volunteer Army in the fiscal year ending June 30, 1900, as shown by the accounts thus far received, amount to $18,897.91, and the amounts thus far reported as collected on pay accounts and otherwise settled amount to $13,571.25, leaving the sum of $5,326.66 yet to be collected. The sales on credit to enlisted men of both Regular and Volunteer Army amount to $39,154.85. The collections by the pay department on muster and pay rolls and on final statements on account of credit sales in the current and previous fiscal years amount, June 30, 1900, to $34,270.69, leaving a balance yet to be collected of $4,884.16. Sales on credit to enlisted men of both Regular and Volunteer Army during the fiscal year 1899, not heretofore reported by reason of delay in receipt of accounts, amount to $3,292.28, and the collections on same account to $4,036.53, leaving still to be collected on account of credit sales in that year $2,730.71.

### FLOOD SUFFERERS ON THE LOWER BRAZOS, TEXAS.

With the authority of the Acting Secretary of War of June 17, 1899, the commanding officer at Fort Sam Houston, San Antonio, Tex., was directed by the commanding general of the Department of Texas on July 6, 1899, to place at the immediate disposal of the governor of Texas 10,000 rations for benefit of flood sufferers on the Lower Brazos. On same date, at the urgent request of the governor, 10,000 additional rations were ordered sent from San Antonio, making 20,000 in all. All rations were sent to Richmond, Tex. On August 2, 1899, the acting chief commissary, Department of Texas, received from the governor of Texas the sum of $2,214.86 in full payment of the rations above referred to.

### STORM SUFFERERS IN PORTO RICO.

On the 8th of August, 1899, a hurricane of unusual severity swept over the island of Porto Rico, destroying everything in its path and rendering destitute over 100,000 souls. On account of impending famine and to relieve distress by food issues, the Secretary of War, on August 11, 1899, directed the sending by first transport to San Juan for distribution, under the direction of the commanding general of the department, to the destitute population 600,000 pounds each of beans and rice. Instructions were immediately communicated to the purchasing commissary at New York City, and the stores were shipped on the transport *McPherson* August 14, 1899.

This was followed by another order of the Secretary of War on August 15, 1899, directing the purchase and distribution to destitutes of 300,000 pounds codfish. This was ordered sent from New York on same date, and was sent by transport *McClellan* on August 23, 1899. Similar purchases were directed at various times thereafter by the Secretary of War and many of them sent in weekly shipments. In addition to the above, the Secretary of War on August 26, 1899, directed the issue to destitutes of 12,000 pounds hard bread, 5,000 pounds corn meal, 600 cans beef, 10,000 cans beans, which were reported by the chief commissary, Department of Porto Rico, as on hand as surplus and rapidly deteriorating. On June 21, 1900, the Secretary of War, on the recommendation of the commanding general, Department of Porto Rico, directed him to cease distribution of rations in Porto Rico on the 15th of July, 1900.

Lieut. Col. F. E. Nye, assistant commissary-general of subsistence, chief commissary of the Department of Porto Rico, in his annual report to the adjutant-general of the department, states as follows:

> The subsistence stores at Aibonito and Humacao were destroyed, and those at the depot at Ponce and the posts of Adjuntas, Cayey, Lares, and Manati were damaged to such an extent as to be practically useless for issues and sales. Fortunately the

main storehouse at San Juan was only slightly damaged and a part of the three months' supply kept on hand for troops on the island was available for issue to the destitute until supplies could be brought from the United States.

The following is a list of the supplies purchased by the Subsistence Department in the United States and shipped to this island, together with their money value, for distribution to the people rendered destitute, which list, however, does not include articles of food, clothing, and other needful supplies contributed by the people of the United States, viz:—

| | | | | | |
|---|---|---|---|---|---|
| Bacon | pounds | 1,098,914 | Pease | pounds | 455,696 |
| Hard bread | do | 268,080 | Oatmeal | do | 15,258 |
| Corn meal | do | 5,900 | Hominy | do | 30,400 |
| Beans | do | 8,695,916 | Crackers | do | 327¼ |
| Rice | do | 14,483,966 | Tongue, beef | 2-pound cans | 2,268 |
| Codfish | do | 2,868,498 | Roast beef | pounds | 2,560 |
| Fish: | | | Do | 2-pound cans | 368 |
| Hake | do | 51,200 | Do | 6-pound cans | 8 |
| Haddock | do | 28,928 | Corned beef | pounds | 15,953 |
| Beans, baked | 3-pound cans | 11,856 | Beef, boiled | do | 21 |

the cost price of which amounted to $824,828.12. These supplies were all turned over to Maj. Thomas Cruse, quartermaster, United States volunteers, for distribution under instructions of the board of charities instituted by General Orders, No. 116, from headquarters Department of Porto Rico, dated August 12, 1899.

The period of time during which these supplies were distributed extended from August 15, 1899, to July 15, 1900, when, pursuant to instructions received from the Headquarters of the Army, dated June 21, the distribution was discontinued.

In addition to the articles enumerated above, there were furnished from supplies on hand at the posts on the island to meet immediate wants pending the arrival of supplies from the United States—

| | | | | | |
|---|---|---|---|---|---|
| Fresh beef | pounds | 5,504½ | Sugar | pounds | 2,067 |
| Bacon | do | 3,720 | Vinegar | gallons | 115 |
| Pickled mackerel | do | 326½ | Salt | pounds | 198 |
| Flour | do | 19,172 | Pepper | do | 54 |
| Hard bread | do | 60,740 | Soap | do | 523 |
| Baking powder | do | 96 | Apples, evaporated | do | 503 |
| Beans | do | 1,249 | Milk | cans | 48 |
| Rice | do | 977 | Peaches, evaporated | pounds | 481 |
| Hominy | do | 42 | Prunes | do | 484 |
| Potatoes | do | 8,533 | Salmon | cans | 988 |
| Onions | do | 2,293 | Sugar: | | |
| Tomatoes | 3-pound cans | 386 | Cut loaf | pounds | 88 |
| Do | gallons | 180 | Granulated | do | 24 |
| Coffee, green | pounds | 1,268 | Matches | boxes | 108 |

the money value of which amounted to $6,652.04.

The total money value of all issues of subsistence stores thus made during the period from August 15, 1899, to July 15, 1900, was as follows:

| | |
|---|---|
| Subsistence stores sent from New York | $824,828.12 |
| Subsistence stores issued to meet immediate wants pending arrival of stores from New York | 6,652.04 |
| Total | 831,480.16 |
| There has been reimbursed from the appropriation "Emergency fund" the sum of | 400,776.65 |
| Leaving a balance still due to the appropriation "Subsistence of the Army, 1900" of | 430,703.51 |

### ISSUES TO INDIANS.

Upon the recommendation of the commanding officer at Fort Clark, Tex., of July 22, 1899, that authority be given for the issue of rations to the Seminole negro Indians living on the military reservation at Fort Clark, until such time as they could become self-supporting by the raising of crops or until some other arrangement could be made for a permanent home for them, the Secretary of War authorized the issue for such period as the department commander might deem necessary, not exceeding four months. On January 6, 1900, a further continuance of this issue was authorized by the Secretary of War and the issue ceased on March 19, 1900. The value of the rations issued to these Indians was $3,313.37.

In addition to the above, subsistence stores were issued to the Apache Indians at Fort Sill, Okla., under the appropriation act of March 3, 1899, to the value of $11,225.39; and to destitute Alaska Indians to the value of $315.30.

### CUBAN SCHOOL TEACHERS.

In obedience to instructions of the Secretary of War of April 25, 1900, the purchasing commissary at New York was informed that arrangements had been made to transport early in June, 1900, 1,450 school teachers from Cuba to Boston and return, and that subsistence would be provided for them in the saloon mess while en route to Boston and returning therefrom. The steamers engaged in transporting them to Boston were the *Sedgwick*, *McClellan*, *Crook*, *McPherson*, and *Burnside*. The steamers engaged in transporting them from Boston, via New York and Philadelphia, to Cuba were the *Sedgwick*, *Rawlins*, *Crook*, and *McPherson*. The actual number subsisted on the trip to Boston was 1,279; the number of meals served was 25,399; aggregate cost, $3,849.53; cost per meal, 0.1514 cents. The actual number subsisted on the trip from Boston was 1,308; the number of meals served, 60,068; aggregate cost, $8,556.24; cost per meal, 0.1424 cents. The purchasing commissary at New York states that the reports from all the transport commissaries show that the teachers had ample food, and there were no complaints as to quality or quantity of food served. He also states that the time required for the return voyage exceeded the previous one, owing to the delay in New York, Philadelphia, and Habana, and distribution to various ports after leaving Habana. Reimbursement from the revenues of the island of Cuba to the appropriation "Subsistence of the Army, 1900," in the sum of $3,849.53 has been made, and request for similar reimbursement to the appropriation "Subsistence of the Army, 1901," in the sum of $8,556.24, was submitted to the Secretary of War September 22, 1900.

### SPECIAL ISSUES.

Special issues were made up to June 30, 1900, as follows:

| To whom issued. | Value. | Refunded. |
|---|---|---|
| United States Marines at San Juan, Porto Rico | $3,207.00 | $2,825.62 |
| United States Navy, on transport Ohio | 3,615.60 | 3,615.60 |
| United States Navy, Paymaster Sullivan | 970.38 | 970.38 |
| United States transport Indiana | 173.75 | 173.75 |
| Civil government, Island of Cuba | 175.51 | .......... |
| Provost-marshal-general, Manilla (for prisoners) | 343.46 | 343.46 |
| United States tug Reno (by Col. C. A. Woodruff, December, 1899) | 125.37 | 125.37 |
| United States tug Kanawha (by Col. C. A. Woodruff, December, 1899, and January, 1900) | 281.92 | .......... |
| Total | 8,892.99 | 8,054.18 |

### GRATUITOUS ISSUES.

Gratuitous issues were made as follows:

| To whom issued. | Value. |
|---|---|
| Destitute Cubans (not reported in fiscal year 1899) | $79,414.85 |
| Destitute Cubans (fiscal year 1900) | 38,930.77 |
| Destitute Filipinos | 5,508.16 |
| Destitute Filipinos in exchange for work on public roads | 43.59 |
| Spanish refugees in Philippines | 1,949.10 |
| Insurgent prisoners in Philippines (not reported in fiscal year 1899) | 186.44 |
| Insurgent prisoners in Philippines (fiscal year 1900) | 47,291.13 |
| Destitute miners in Alaska | 818.32 |
| Naval detachment in charge of launch for military operations at Manila | 12.08 |
| Naval detachment on patrol duty during quarantine at Fort Monroe, Va., yellow fever epidemic | 9.28 |
| Total | 174,163.22 |

### MISCELLANEOUS ISSUES.

Miscellaneous issues were made as follows:

| To whom issued. | Rations. |
|---|---|
| Citizen prisoners | 1,467 |
| Destitute citizens | 7,844 |
| Civilian employees | 2,433,530 |
| Military convicts (general prisoners at various military posts) | 255,197 |
| Total | 2,697,538 |

### SUBSISTENCE FUNDS HELD IN HAND FOR READY DISBURSEMENT.

I had the honor at the last session of Congress to invite attention to the necessity of obtaining legislation which would permit subsistence officers, especially those on duty in cities where the Treasuer of the United States and the assistant treasurers of the United States are located, to hold in their personal possession, for meeting the numerous small money demands from soldiers on furlough, soldiers traveling on duty, recruits setting out to join their companies, etc., small amounts of public funds of the appropriation "Subsistence of the Army." The condition of the law and of the regulations on the subject is fully set forth in House Doc. No. 309, Fifty-sixth Congress, first session, and in Senate Report No. 412, same session, and a bill (S. 2870) giving authority to all officers intrusted with the disbursement of subsistence funds to hold restricted amounts of such funds in their personal possession, passed the Senate March 24, 1900, and was referred to the Committee on Military Affairs of the House on March 27, 1900, but was not reached for action. I urgently request the honorable the Secretary of War to use endeavors to have the bill passed at the coming session, as the measure is not only one which is promotive of discipline but is one of justice to enlisted men. The bill as it passed the Senate was in the form recommended by this office, and was as follows:

AN ACT concerning disbursing officers of the Subsistence Department of the Army.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That officers intrusted with the disbursement of funds for the subsistence of the Army are hereby authorized to keep, at their own risk in their personal possession for disbursement, such restricted amounts of subsistence funds for facilitating payments of small amounts to public creditors as shall from time to time be authorized by the Secretary of War.

## SERVICES OF THE SUBSISTENCE DEPARTMENT IN CUBA.

All subsistence supplies required for posts in Cuba have been furnished from New York on calls made direct by the chief commissary on the purchasing commissary at that place except articles that are procurable on the island, which the chief commissary, Division of Cuba, is authorized to purchase if found suitable and of less or equal cost of like articles obtained and shipped from the home markets. Fresh beef and vegetables are purchased under contract.

Refrigerated beef was supplied to but four points under the contract—Habana, Quemados, Matanzas, and Santiago—and freshly slaughtered beef to all other posts. The quality and condition of the cattle slaughtered varied somewhat in different portions of the island, but constant and continual supervision on the part of the officers and occasional rejection of the beef have resulted on the whole in a satisfactory service.

Several efforts were made during the year to have refrigerated beef substituted at several of the posts fairly adjacent to a refrigerating plant, but without success.

The chief commissary of the division reports that the contract for potatoes and onions has been very satisfactorily carried out through the contractors' agent in Habana, who promptly filled all the requisitions.

Experience has shown that the native (Irish) potato can not be relied on, though for some months in the year it is preferable to old potatoes from the States or elsewhere.

The onions raised in Cuba—when in the market—can not be excelled, and have been supplied whenever available.

In his report of an inspection of Columbia Barracks, Cuba, made September 9 to November 15, 1899, Maj. Frank H. Edmunds, acting inspector-general, Department of the Province of Habana and Pinar del Rio, says:

> Too much praise can not be given the Subsistence Department for the manner in which it is supplying the troops serving in the tropics. It would be difficult to name any article of food which necessity demands or fancy could desire which is not to be had for the asking, and of quality the best. The finest grade of refrigerated beef is constantly on hand for issue and for sale to the troops and officers of this post.

### RATIONS TO CUBAN DESTITUTES.

The following rations were issued to destitute Cubans during the year ending June 30, 1900:

| | |
|---|---|
| Department of Habana and Pinar del Rio: | |
| Red Cross orphan asylums | 183,610 |
| Other hospitals and asylums | 37,424 |
| Towns | 200,700 |
| Department of Matanzas and Santa Clara charitable institutions | 344,058 |

and following issues of fresh beef to charitable institutions: 208,672 pounds, value $26,858.70.

From September 29, 1899, to December 13, 1899, the Cuban ration, under authority of the division commander, dated April 6, 1899, was as follows: In each 100 rations there were 50 pounds of bacon or tinned meat, 50 pounds of hard bread or flour, 6 pounds of coffee, 4 pounds of soap, 15 pounds of rice, 10 pounds of sugar, and in addition, for the sick, there were 24 cans of milk and 24 cans of soup.

Under General Order 49, Division of Cuba, December 13, 1899, the Cuban ration was as follows: In each 100 rations there were 25 pounds of flour or hard bread, 50 pounds of bacon or tinned meat, 20 pounds of rice, 10 pounds of beans, 4 pounds of salt, 4 pounds of soap, and in addition, for the sick, there were 10 cans of milk.

The sum of $8,072.93, for payment of these Cuban rations, was transferred to the chief commissary, Division of Cuba, by the treasurer of the island of Cuba out of the funds of the island.

### SERVICES OF THE SUBSISTENCE DEPARTMENT IN PORTO RICO.

All subsistence supplies required for posts in Porto Rico have been furnished from New York on calls made direct by the chief commissary, Department of Porto Rico, on the purchasing commissary at that place, except articles that are procurable on the island, which the chief commissary is authorized to purchase, if found suitable and of less or equal cost of like articles obtained and shipped from the home markets. Fresh beef and vegetables are purchased under contract.

Lieut. Col. F. E. Nye, assistant commissary-general of subsistence, has been on duty during the past fiscal year as chief commissary, Department of Porto Rico, and as purchasing commissary at San Juan. He has administered the affairs of the subsistence department, and, in addition to his regular duties, he turned over to Maj. Thomas Cruse, quartermaster, all stores for relief of destitute sufferers in Porto Rico. In his annual report to the adjutant-general of the Department of Porto Rico for the fiscal year 1900 he says:

*Storehouses.*—Since the last report the number of posts have been considerably reduced and the storehouses are in excellent condition, new ones having been built at several posts.

*Supplies.*—With the exception of vegetables, coffee, and sugar, the supplies are purchased in the United States; one month's supply is kept on hand at posts and one month's in depot. All supplies are received at the depot at San Juan, and from there shipped direct to the posts. The stores on hand are generally in good condition and of excellent quality. Ice has been issued to the troops wherever this could be done, at the rate of 100 pounds per day to each company. (Since increased to 150 pounds.) Sales are made to civilian employees of the Army and to others having special authority from the War Department to purchase.

*Fresh beef.*—Advertisement was published in the principal cities of the United States and in the principal newspapers of this island calling for bids for supplying the posts in Porto Rico with fresh beef for the fiscal year ending June 30, 1901. No bids were received from parties on the island, and Swift & Co., being the lowest bidders in the United States, a contract was made with them. All posts on the island are at this date supplied with refrigerated beef from the United States, the beef for interior posts being forwarded in ice boxes three times each week; and it has been received and issued in a satisfactory condition. The refrigerated beef has been good in quality and has given general satisfaction. Refrigerators have been put up at Aguadilla (since made a subpost of Mayaguez), Cayey, and Mayaguez. Two additional ice plants have been established in San Juan since last annual report, one operated by the Medical Department, United States Army, and ice is now supplied to all posts in the department.

*Fresh vegetables.*—Fresh vegetables have been supplied during the year by contract, and the quality has been good, with the exception of those received during June, when it was impossible to provide a satisfactory quality; new potatoes not being in market, and last year's crop, while fairly good when received at San Juan, was not able to stand transportation.

After the occupation of this island by the United States the Spanish Government required the usual tariff on coffee from this island, which stopped the export to that country; and to relieve the merchants, who had accumulated large stores, the purchasing officer was directed to buy coffee and ship to the United States and Manila. The few merchants who held the supply immediately raised the price from 8 cents to 16 cents on Government bids, which were all rejected, and after accepting a few hundred thousand pounds at reasonable rates the purchase was discontinued.

## SERVICES OF THE SUBSISTENCE DEPARTMENT IN THE PHILIPPINES.

Maj. David L. Brainard, commissary of subsistence of volunteers (captain and commissary of subsistence, United States Army), as chief commissary, Department of the Pacific and Eighth Army Corps, was granted leave of absence for one month on surgeon's certificate of disability, with permission to leave the limits of command and visit Japan, per Special Orders, No. 244, Headquarters Department of the Pacific and Eighth Army Corps, September 6, 1899. Left Manila September 7, 1899. By Special Orders, No. 201, Headquarters of the Army, August 28, 1899, he was directed to be relieved from duty as chief commissary, Department of the Pacific and Eighth Army Corps, and proceed to San Francisco, Cal., and on arrival report by telegraph to the Adjutant-General of the Army for orders.

Since the last annual report of this bureau the following changes have occurred in the personnel of the subsistence department in the Philippine Islands:

Maj. Oskaloosa M. Smith, commissary of subsistence, was relieved from duty in this office on September 1, 1899, and sent to Manila, P. I., to report in person to the commanding general, Department of the Pacific and Eighth Army Corps, for duty as chief commissary of that department and corps, to relieve Maj. David L. Brainard, commissary of subsistence, United States Volunteers, per Special Orders, No. 201, Headquarters of the Army, August 28, 1899. He was retired from active service, per Special Orders, No. 37, Headquarters of the Army, February 13, 1900. He was relieved by Major Dravo, commissary of subsistence.

Maj. Edward E. Dravo, commissary of subsistence, was relieved from duty as chief commissary, Department of the Gulf, and purchasing commissary at Atlanta, Ga., September 25, 1899, and sent to San Francisco, Cal., to report to the commanding general, Department of California, not later than October 10, 1899, for temporary duty, and upon completion of same to proceed to Manila, P. I. He was appointed and announced as chief commissary, Department of the Pacific and Eighth Army Corps, per General Orders, No. 1, Headquarters Department of the Pacific and Eighth Army Corps, January 2, 1900. Duties changed to chief commissary, Division of the Philippines, April 7, 1900, by discontinuance of Department of Pacific and Eighth Army Corps and establishment of the Division of the Philippines, per General Orders, No. 1, Headquarters Division of the Philippines, April 7, 1900. By Special Orders, No. 125, Headquarters of the Army, May 28, 1900, he was ordered to be relieved from duty as chief commissary of the Division of the Philippines by Col. C. A. Woodruff, assistant commissary-general of subsistence, and directed to proceed to San Francisco, Cal., and upon arrival to report by telegraph to the Adjutant-General of the Army for instructions. Relieved from duty as chief commissary, Division of the Philippines, by Col. C. A. Woodruff, assistant commissary-general of subsistence, July 17, 1900.

Col. Charles A. Woodruff, assistant commissary-general of subsistence, was, by Special Orders, No. 125, Headquarters of the Army, May 28, 1900, relieved from duty as chief commissary, Department of the East, and purchasing commissary at New York City, and sent to Manila, P. I., for duty as chief commissary, Division of the Philippines, to relieve Maj. Edward E. Dravo, commissary of subsistence.

He was relieved from duty as chief commissary, Department of the East, and purchasing commissary, New York City, June 7, 1900. En route to Manila, P. I., on United States Army transport *Thomas*, June 16 to July 17, 1900. Arrived at Manila and reported to commanding general, Division of the Philippines, relieving Maj. E. E. Dravo, commissary of subsistence, as chief commissary of that division, July 17, 1900.

Capt. A. D. Niskern, commissary of subsistence, was relieved from duty as chief commissary, Department of the Colorado, September 25, 1899, and purchasing commissary at Denver, Colo., September 30, 1899, and sent to San Francisco, Cal., to report to the commanding general, Department of California, not later than October 10, 1899, for temporary duty. He was relieved from temporary duty and directed to proceed to Manila, P. I., for duty. Left San Francisco October 25, and arrived at Manila November 23, 1899. Assigned to duty as chief commissary, District of Mindanao and Jolo, per Special Orders, No. 324, Headquarters Department of the Pacific and Eighth Army Corps, November 25, 1899. Arrived at Zamboanga, P. I., December 9, 1899, and assumed duty as chief commissary, Military District of Mindanao and Jolo, and as depot commissary at that place, same date. Relieved from such duty per Special Orders, 57, Headquarters Division of the Philippines, June 9, 1900, and assigned to duty as chief commissary, Department of Southern Luzon, Manila, P. I.

Capt. John H. Duval, commissary of subsistence, was relieved from duty as chief commissary Department of the Missouri, and purchasing commissary at Omaha, Nebr., November 11, 1899, and directed to proceed to San Francisco, Cal., and report in person to the commanding general Department of California for temporary duty. Left San Francisco December 20, 1899; arrived at Manila January 25, 1900, and assigned to duty as chief commissary First Division, Eighth Army Corps, per Special Orders, No. 32, Headquarters Department of Pacific and Eighth Army Corps, February 1, 1900. Status changed to chief commissary Department of Southern Luzon, April 7, 1900, per General Orders, No. 1, Headquarters Division of the Philipines, April 7, 1900. Granted two months' sick leave, per Special Order 55, Headquarters Division of the Philippines, June 7, 1900. Arrived in United States July 14, 1900.

Maj. George B. Davis, commissary of subsistence of volunteers, captain and commissary of subsistence, United States Army, was relieved from duty as chief commissary Department of the Lakes, and purchasing commissary at Chicago, Ill., October 2, 1899, and ordered to proceed to San Francisco, Cal., and report in person to the commanding general Department of California not later than October 10, 1899, for temporary duty. Arrived at Manila November 23, 1899. Assigned to duty as chief commissary Second Division, Eighth Army Corps, at Bautista, P. I., November 28, 1899, per Field Orders, No. 226, Headquarters Second Division, Eighth Army Corps, 1899. Relieved from duty as chief commissary Second Division, Eighth Army Corps, and sent to Manila for duty in charge of the Manila subsistence depot, per Special Orders, No. 44, Headquarters Department of the Pacific and Eighth Army Corps, February 13, 1900. Left Bautista, P. I., February 13, 1900. Took charge of subsistence depot at Manila March 1, 1900.

Capt. Charles R. Krauthoff was appointed commissary of subsistence, with the rank of captain, February 15, 1900. Accepted commission March 11, 1900. Prior to his appointment in the regular establishment he served as commissary of subsistence of volunteers, with the rank of captain, from October 17, 1898 (date of his appointment), as chief commissary First Separate Brigade, Eighth Army Corps, at Manila, to January 13, 1899; as commissary Second Brigade, First Division, Eighth Army Corps, and in charge of issues to troops of First and Second divisions, Eighth Army Corps, from January 15, 1899, to February 28, 1900. In addition to this duty he had charge of funds and property pertaining to sales depot, Quiapo, Manila, from April 1, 1899, to September 3, 1899; in charge of depot commissary, Binondo, Manila, P. I., August 31, 1899, to February 28, 1900. Directed to be relieved from duty in Department of Pacific and Eighth Army Corps and ordered to proceed to San Francisco, and upon arrival to report by letter to the acting commissary general of subsistence for orders, per Special Orders, No. 53, Headquarters of the Army, March 5, 1900. Left Manila March 6, 1900. Reached San Francisco April 5, 1900, and assigned to duty as assistant to the purchasing commissary at that place April 28, 1900, per Special Orders, No. 92, Headquarters of the Army, April 19, 1900. He was relieved as depot commissary at Binondo, Manila, P. I., by Maj. George B. Davis, commissary of subsistence.

The duties devolving upon these officers were arduous in the extreme, and especial mention is made of Maj. D. L. Brainard and Maj. E. E. Dravo on account of the large money accountability connected with their duties as chief commissaries of the division, likewise for their supervision of the distribution of the tremendous quantities of subsistence stores required for the troops in those islands.

### SUBSISTENCE STORES AND PROPERTY SENT TO THE PHILIPPINES.

The following articles and quantities of subsistence stores and property required for on requisitions forwarded to this office by the chief commissary at Manila, P. I., and purchased in New York, Chicago, and San Francisco, were shipped by army transports and commercial vessels to the Philippine Islands from New York and San Francisco, Cal., during the period from July 1, 1899, to June 30, 1900. This does not include the stores used on the army transports.

#### SUBSISTENCE STORES.

| | | |
|---|---|---|
| Beef: | | |
| Roast | pounds.. | 96,000 |
| Corned | 2-pound cans.. | 692,500 |
| Beef hash, Mother Fuller's | 1-pound cans.. | 1,920 |
| | 2-pound cans.. | 1,128 |
| Bacon | pounds.. | 5,357,000 |
| Fish: | | |
| Cod | do.... | 263,000 |
| Mackerel, ½ barrels | do.... | 9,000 |
| Mackerel | do.... | 10,000 |
| Mackerel | kits.. | 1,200 |
| Flour for issue | pounds.. | 19,560,000 |
| Hard bread | do.... | 5,272,000 |
| Corn meal | do.... | 56,000 |
| Baking powder | do.... | 44,500 |
| Beans | do.... | 1,539,500 |
| Beans, baked | 3-pound cans.. | 54,900 |
| Pease | pounds.. | 45,000 |
| Farina | do.... | 1,000 |
| Rice | do.... | 25,000 |
| Hominy | pounds.. | 14,000 |
| Potatoes, desiccated | do.... | 46,000 |
| Onions, desiccated | do.... | 14,000 |
| Emergency rations | number.. | 251,297 |
| Beaten bread | 50-pound cases.. | 100 |
| Tomatoes | 2½-pound cans.. | 342,600 |
| | 3-pound cans.. | 1,616,000 |
| Coffee: | | |
| Green | pounds.. | 254,200 |
| Roasted | do.... | 1,793,000 |
| Molasses | gallons.. | 14,000 |
| Sirup: | | |
| Maple | do.... | 1,090 |
| Cane | do.... | 14,000 |
| Vinegar | do.... | 108,800 |
| Salt, issue | pounds.. | 493,700 |
| Pepper, black | do.... | 53,550 |
| Soap, issue | do.... | 1,053,700 |
| Candles | do.... | 434,000 |
| Yeast, magic | do.... | 7,500 |

### SUBSISTENCE STORES—Continued.

| | | |
|---|---|---|
| Candles, lantern | pounds | 19,000 |
| Coarse salt for public animals | do | 38,000 |
| Asparagus | cans | 19,010 |
| Apples | 2½-pound cans | 50,545 |
| | 3-pound cans | 124,800 |
| Apples, evaporated | pounds | 433,500 |
| Apricots | 3-pound cans | 85,920 |
| | 2½-pound cans | 2,500 |
| Bacon, breakfast | pounds | 50,000 |
| | 1-pound cans | 50,160 |
| Cheese: | | |
| American | pounds | 11,800 |
| Edam | number | 4,584 |
| Chocolate: | | |
| Plain | pounds | 14,385 |
| Vanilla | do | 38,145 |
| Coffee: | | |
| Java (extra) | do | 8,750 |
| Mocha (extra) | do | 2,500 |
| Corn, green | 2-pound cans | 439,200 |
| Cocoa | pounds | 1,317 |
| Crabs (pony cans) | cans | 54,792 |
| Crabs | 2-pound cans | 3,576 |
| Crackers: | | |
| Soda | pounds | 250,500 |
| Ginger | do | 223,750 |
| Ham: | | |
| Salt, dry (1-pound cans) | cases | 100 |
| Deviled | ½-pound cans | 139,216 |
| Surgar-cured | pounds | 885,080 |
| Sliced | do | 40,500 |
| Lard | 5-pound cans | 480 |
| | pails, pounds | 110,000 |
| Gelatin | 2-ounce packets | 17,970 |
| Mellin's food | cans | 240 |
| Lobster | 1-pound cans | 228,880 |
| Macaroni | pounds | 166,500 |
| Milk | 1-pound cans | 405,200 |
| Mushrooms | one-half cans | 26,800 |
| Oatmeal: | | |
| "B" | pounds | 79,400 |
| Rolled | pounds | 160,000 |
| Oysters | 1-pound cans | 75,000 |
| | 2-pound cans | 56,472 |
| Peaches | 3-pound cans | 382,200 |
| Peaches, evaporated, 2-pound packets, pounds | | 497,500 |
| Pears | 2-pound cans | 255,400 |
| Peas, green: | | |
| American (cans) | pounds | 297,360 |
| French | one-half cans | 17,720 |
| Dried fruits | pounds | 1,521,000 |
| Pigs' feet (fresh) | 2-pound cans | 2,640 |
| Pineapples | do | 61,200 |
| Preserves, damson | do | 52,200 |
| Prunes | pounds | 636,900 |
| Salmon | 1-pound cans | 1,096,000 |
| | 2-pound cans | 150,000 |
| Sardines | one-fourth boxes | 201,600 |
| | one-half boxes | 29,200 |
| Shrimps | cans | 24,000 |
| Soups: | | |
| Beef | quart cans | 34,800 |
| Chicken | do | 50,400 |
| Clam-chowder | do | 48,000 |
| Mock-turtle | do | 33,600 |
| Ox-tail | do | 48,000 |
| Bouillon, clam | jars | 48 |
| | cases | 251 |
| Starch, corn | pounds | 236,680 |
| Soup, condensed, Diamond | cans | 4,992 |
| Sugar, white: | | |
| Cut loaf | pounds | 69,875 |
| Granulated | do | 68,000 |
| Powdered | do | 13,825 |
| Tapioca | do | 13,400 |
| Tongue, beef | 2-pound cans | 31,682 |
| Beef extract | jars | 240 |
| Corn-beef hash | 2-pound cans | 4,800 |
| Beef stew, Franco-American | do | 4,800 |
| Cinnamon, ground | pounds | 4,273 |
| Cloves, ground | do | 2,233 |
| Flavoring extract: | | |
| Lemon | bottles | 34,092 |
| Vanilla | do | 47,592 |
| Ginger, ground | pounds | 2,588 |
| Jam, blackberry | 2-pound cans | 147,600 |
| Jelly, currant | do | 78,000 |
| Lime juice | bottles | 21,240 |
| Mustard: | | |
| Ground | pounds | 18,370 |
| French | bottles | 22,800 |
| Nutmegs | pounds | 373 |
| Oil, olive | bottles, quart | 5,112 |
| Olives | pint bottles | 7,200 |
| | quart jars | 17,940 |
| Pepper, red: | | |
| Cayenne | pounds | 658 |
| Chile colorado | do | 1,186 |
| Pickles, Bunker Hill | pint jars | 2,665 |
| | quart jars | 2,005 |
| | gallon jars | 625 |
| Pickles | one-half barrels | 1,550 |
| | one-half barrels, gallons | 14,000 |
| Pickles, chowchow | pint jars | 6,265 |
| | quart jars | 3,205 |
| | gallon jars | 625 |
| Pickles, gherkins | pint jars | 7,465 |
| | quart jars | 2,005 |
| | gallon jars | 625 |
| Pickles, mixed | pint jars | 2,665 |
| | quart jars | 2,005 |
| | gallon jars | 1,065 |
| Salt, table | bags, pounds | 55,150 |
| | boxes, pounds | 2,500 |
| Sauce: | | |
| Cranberry | cans | 39,600 |
| Worcestershire | bottles | 18,260 |
| Catsup | cases | 1,073 |
| Marmalade | jars | 35,960 |
| Curry powder | bottles | 530 |
| Tobasco sauce | do | 2,688 |
| Strawberries, preserves, G. D | cans | 11,712 |
| Raspberries, preserves, G. D | do | 312 |
| Plums | do | 4,440 |
| Peaches, preserves | do | 9,000 |
| Pipes, brierwood: | | |
| No. 1 | number | 12,864 |
| No. 2 | do | 10,504 |
| No. 3. | do | 11,106 |
| No. 4 | do | 14,882 |
| Pipes, cob | do | 26,400 |
| Pipestems | do | 1,500 |
| Tobacco, plug | pounds | 548,200 |
| Tobacco, smoking: | | |
| Durham | do | 296,800 |
| Lone Jack | do | 675 |
| Seal of North Carolina | do | 29,800 |
| Vanity Fair | do | 300 |
| Cigarette papers | books | 250 |
| Soap, toilet: | | |
| Amole, Diamond King | cakes | 20,400 |
| Cashmere bouquet | do | 19,067 |
| Castile, white | pounds | 8,525 |
| Cuticura | cakes | 23,157 |
| Glycerine, Pears' | do | 37,692 |
| Lettuce, Coudray's | do | 7,722 |
| Oatmeal | do | 24,351 |
| Yankee shaving | do | 20,223 |
| Soap: | | |
| Kitchen, sapolio | do | 20,109 |
| Laundry, ivory | do | 320,200 |
| Bluing, powered | 2-ounce boxes | 8,405 |
| Starch, laundry | pounds | 11.025 |
| Borax | 1-pound papers | 8,001 |
| Electrosilicon | 3-ounce boxes | 495 |
| Metal polish | 3-ounce tins | 8,555 |
| Tripoli flour | 4-ounce packages | 4,330 |
| Blanco | boxes | 2,380 |
| Toilet powder | boxes | 4,800 |
| Sponges, bath | number | 4,250 |
| Tooth soap, myrrh | boxes | 11,280 |
| Buttons, trousers, metallic: | | |
| Large | dozen | 676 |
| Small | do | 676 |
| Buttons: | | |
| Trousers | do | 2,277 |
| Trousers, composition | do | 1,902 |
| Needles | papers | 2,954 |
| Needles, darning | dozen | 1,986 |

### SUBSISTENCE STORES—Continued.

| | | |
|---|---|---|
| Bags for needles | number.. | 1,200 |
| Needle books with needles | do.... | 2.407 |
| Pins | papers.. | 10,056 |
| Thread, cotton: | | |
| White | spools.. | 24,144 |
| Black | do.... | 27,444 |
| Thread, linen: | | |
| White | do.... | 15,204 |
| Black | do.... | 13,404 |
| Silk | do.... | 961 |
| Envelopes, letter: | | |
| Good | number.. | 465,000 |
| Best | do.... | 340,000 |
| Envelopes, note: | | |
| Good | do.... | 122,200 |
| Best | do.... | 520,000 |
| Ink, black | 3-ounce bottles.. | 23,680 |
| Paper, letter: | | |
| Good | quires.. | 950 |
| Best | do.... | 2,600 |
| Paper, note: | | |
| Good | do.... | 6,050 |
| Best | do.... | 64,050 |
| Pencils, lead: | | |
| No. 2, American | number.. | 25,580 |
| No. 3, American | do.... | 15,540 |
| Penholders | do.... | 26,130 |
| Pens: | | |
| Fine | gross.. | 1,117 |
| Coarse | 5-12 gross.. | 1,035 |
| Stub | ¼ gross.. | 912 |
| Spencerian | gross.. | 13 |
| Basins, hand | number.. | 40,278 |
| Blacking, shoe | boxes.. | 38,200 |
| Brooms, whisk: | | |
| Large | number.. | 11,536 |
| Small | do.... | 11,161 |
| Brushes: | | |
| Blacking | do.... | 14,374 |
| Hair, large | do.... | 10,514 |
| Hair, small | do.... | 13,537 |
| Nail | do.... | 6,010 |
| Tooth, hard | do.... | 41,039 |
| Tooth, soft | do.... | 42,464 |
| Buttons, collar: | | |
| With hinge | do.... | 9,128 |
| Without hinge | do.... | 20,388 |
| Can openers | do.... | 18,414 |
| Chamoisskins | do.... | 9,030 |
| Clothespins | do.... | 29,100 |
| Polish, russet | boxes.. | 62,330 |
| Combs, coarse, horn: | | |
| Medium | number.. | 14,532 |
| Small | do.... | 9,492 |
| Combs: | | |
| Fine, horn | do.... | 4,920 |
| Dressing, rubber | do.... | 9,708 |
| Pocket, rubber | do.... | 7,032 |
| Handkerchiefs, linen: | | |
| Fine | do.... | 6,000 |
| Medium | do.... | 6,144 |

| | | |
|---|---|---|
| Handkerchiefs, silk: | | |
| White | number.. | 372 |
| Red | do.... | 372 |
| Ink, indelible | bottles.. | 5,058 |
| Matches, safety | boxes.. | 2,197,000 |
| Paper, toilet | packages.. | 84,000 |
| Razor strops, No. 1 | number.. | 15,804 |
| Shoestrings: | | |
| Porpoise | pairs.. | 52,768 |
| Linen | do.... | 84,692 |
| Razors | number.. | 2,575 |
| Towels, linen damask | number.. | 11,250 |
| Towels, huckabuck: | | |
| No. 1 | do.... | 41,144 |
| No. 2 | do.... | 36,394 |
| Towels, bath: | | |
| Cotton | do.... | 40,088 |
| Linen | do.... | 8,336 |
| Towels, wash, cotton | do.... | 15,434 |
| Toweling: | | |
| Bleached | yards.. | 3,126 |
| Unbleached | do.... | 2,500 |
| Malted milk | barrels.. | 1,000 |
| | jars..... | 33,085 |
| Ginger ale | barrels.. | 4,750 |
| | bottles.. | 904,400 |
| Shasta water | cases.. | 18,150 |
| Apollinaris water | bottles.. | 11,200 |
| Spinach | cases.. | 900 |
| Succotash | do.... | 12,200 |
| String beans | do.... | 6,150 |
| Squash | cans.. | 1,712 |
| Candies | pounds.. | 86,750 |
| Boston brown bread | cans.. | 19,440 |
| Listerine | bottles.. | 17,185 |
| Extract clams | cans.. | 16,800 |
| Tooth powder | tins..... | 10,000 |
| | bottles.. | 20,000 |
| Malt extract | cases.. | 200 |
| Hops | cases.... | 62 |
| | pounds.. | 5,625 |
| Sweet potatoes | 2-pound cans.. | 16,080 |
| Chipped beef (2-pound cans) | cases.. | 1,590 |
| Sausage (2-pound cans) | do.... | 2,175 |
| Raisins | pounds.. | 28,750 |
| | cases.... | 63 |
| Caviar | ¼-pound cans.. | 4,350 |
| Chutneys (quarts) | bottles.. | 1,140 |
| Honey | bottles, pints... | 5,208 |
| | bottles, quarts.. | 5,040 |
| Malt | pounds.. | 2,350 |
| Malt extract | bottles.. | 6,975 |
| Currants | cases.... | 25 |
| | pounds.. | 5,500 |
| Plum pudding | cans.. | 1,000 |
| Sauerkraut | ¼ barrels.. | 500 |
| Poland water | cases.. | 10 |
| Beeswax | pounds.. | 100 |
| Brushes, shaving | number.. | 11,520 |
| Shaving mugs | do.... | 5,760 |

### SUBSISTENCE PROPERTY.

| | | |
|---|---|---|
| Stock books, large | number.. | 2 |
| Bands, rubber | gross.. | 500 |
| Baskets, waste-paper | number.. | 48 |
| Books, blank: | | |
| Journals, 4-quire | do.... | 300 |
| Records, 4-quire | do.... | 400 |
| Letter copying | do.... | 96 |
| Envelopes, official: | | |
| No. 9 | do.... | 105,000 |
| No. 11 | do.... | 110,000 |
| Envelopes, note: | | |
| No. 5 | do.... | 55,000 |
| No. 6 | do.... | 90,000 |
| Erasers: | | |
| Ink and pencil | do.... | 744 |
| Steel, knife-blade | do.... | 200 |
| Ink, black: | | |
| Writing (quarts) | bottles.. | 400 |
| copying (quarts) | do.... | 300 |

| | | |
|---|---|---|
| Ink, crimson | 2-ounce bottles.. | 840 |
| Inkstands | number.... | 150 |
| Mucilage | bottles, quart.... | 48 |
| | bottles, 4-ounce.. | 800 |
| Paper: | | |
| Abstract | quires.. | 200 |
| Blotting | sheets.. | 5,000 |
| Flat cap | quires.. | 200 |
| Folio post | do.... | 200 |
| Foolscap | do.... | 400 |
| Letter, official | do.... | 600 |
| Letter, unofficial | do.... | 500 |
| Note, ruled | do.... | 200 |
| Note, unruled | do.... | 200 |
| Wrapping, manila | do.... | 1,000 |
| Wrapping, rolls | number.. | 400 |
| Paper fasteners | gross.. | 155 |
| Paper folders | number.. | 150 |
| Paper weights | do.... | 150 |

SUBSISTENCE PROPERTY—Continued.

| | | |
|---|---|---|
| Pencils, lead: | | |
| Black | number | 5,000 |
| Red and blue | do | 1,000 |
| Pens, steel: | | |
| Coarse | gross | 100 |
| Fine | do | 100 |
| Stub | do | 100 |
| Pins, pyramids | number | 600 |
| Rulers, wood | do | 75 |
| Sealing wax, 4-ounce | sticks | 200 |
| Shears, pairs | number | 100 |
| Sponge cups | do | 50 |
| Sponges | do | 200 |
| Tablets, letter: | | |
| Pen | do | 1,000 |
| Pencil | do | 1,000 |
| Tablets, note: | | |
| Pen | do | 1,000 |
| Pencil | do | 1,000 |
| Tape, red | spools | 200 |
| Pen racks | number | 100 |
| Chairs: | | |
| Office | do | 36 |
| Revolving | do | 13 |
| Desks | do | 7 |
| Letter presses | do | 24 |
| Bookcase | do | 1 |
| Bookcase, revolving | do | 1 |
| Letter-press stands | do | 24 |
| Safes, iron | do | 12 |
| Spittoons | do | 54 |
| Tables | do | 24 |
| Washbowls | do | 12 |
| Wash pitchers | do | 12 |
| Washstands | do | 13 |
| Typewriter cabinet with chair | do | 1 |
| Dictionary stand | do | 1 |
| Toilet set | do | 1 |
| Axes | do | 150 |
| Ax handles | do | 150 |
| Bags, paper: | | |
| 1-pound | do | 75,000 |
| 3-pound | do | 75,000 |
| 5-pound | do | 100,000 |
| 10-pound | do | 75,000 |
| 15-pound | do | 75,000 |
| 25-pound | do | 75,000 |
| 50-pound | do | 50,000 |
| Measures, liquid, XXX tin: | | |
| Pint | do | 48 |
| Quart | do | 100 |
| One-half gallon | do | 100 |
| Gallon | do | 50 |
| Meat saws | do | 50 |
| Mops | do | 100 |
| Mop handles | do | 50 |
| Nails, assorted | pounds | 500 |
| Saws, hand, C. C | number | 50 |
| Scales: | | |
| Counter | do | 25 |
| Platform | do | 150 |
| Spring-balance | do | 40 |
| Scoops, XXX tin: | | |
| Small | do | 25 |
| Medium | do | 50 |
| Large | do | 25 |
| Shipping tags | do | 25,000 |
| Turpentine | gallons | 25 |
| Bags, cotton: | | |
| 25-pound | number | 10,000 |
| 50-pound | do | 8,000 |
| Bags, gunny, cotton, 100-pound | do | 4,000 |
| Buckets, galvanized-iron | do | 200 |
| Butcher knives | do | 100 |
| Butcher steels | do | 100 |
| Excelsior | pounds | 1,000 |
| Funnels, XXX tin: | | |
| Pint | number | 50 |
| Quart | do | 75 |
| One-half gallon | do | 75 |
| Gallon | do | 50 |
| Hammers, claw | do | 100 |
| Hatchets, claw | do | 75 |
| Lampblack | pounds | 25 |
| Twine: | | |
| Cotton | do | 250 |
| Hemp | do | 150 |
| Sacking | do | 100 |
| Field desks | number | 24 |
| Hectographs | do | 24 |
| Paper files, letter | do | 24 |
| Commissary chests | do | 112 |
| Typewriter paper, legal: | | |
| Heavy | quires | 250 |
| Manifold | do | 250 |
| Typewriter paper, letter: | | |
| Heavy | do | 250 |
| Manifold | do | 250 |
| Typewriter oil | bottles | 100 |
| Paper: | | |
| Carbon | sheets | 2,000 |
| Oiled | do | 500 |
| Coffee roasters | number | 250 |
| Manuscript covers | do | 5 |
| Pads, self-inking | do | 12 |
| Baskets, wire, desk | do | 12 |
| Paper punch | do | 1 |
| Letter files | dozen | 3 |
| Hook clips | gross | 1 |
| Thumb tacks | do | 3 |
| Pens: | | |
| Spencerian | do | 2 |
| Esterbrook, 314 | do | 20 |
| Clocks | number | 1 |
| Trucks, warehouse | do | 150 |
| Stencil-cutting machine | do | 1 |
| Stencil board | sheets | 2,000 |
| Triplicating pads: | | |
| Letter size | number | 250 |
| Note size | do | 100 |
| Duplicating pads | do | 250 |
| Clothes wringers | do | 312 |
| Flatirons, Mrs. Potts's | sets | 312 |
| Washboards | number | 312 |
| Washtubs, G. I., sets 3 | sets | 312 |
| Cups and saucers | number | 1,332 |
| Concentrated lye | cans | 9,360 |
| Insect powder | pounds | 212 |
| Frying pans | number | 1,332 |
| Pots, agate, small, with covers | do | 1,332 |
| Plates, white enamel | do | 1,332 |
| Knives, plated | do | 1,332 |
| Forks | do | 1,332 |
| Spoons, large and small, plated | do | 2,664 |
| Coffeepots | do | 252 |

Instructions were sent the chief commissary, Department of the Pacific and Eighth Army Corps, at Manila, on May 16, 1899, that in submitting requisitions he should take into consideration any articles needed that might be procured on the islands, and if suitable and of less or equal cost of like articles obtained and shipped from the home market, to purchase them. Also to take into consideration the perishability of many of the articles purchased by the Subsistence Department and exercise great caution, to the end that there should be no accumulation, and in case of accumulation to take the necessary steps to prevent loss to the Government by making proper disposition.

Fresh beef was directed to be further obtained from the Navy, as at that time, until the refrigerating building was in working order and other arrangements made.

### REIMBURSEMENT.

The following amounts have been reimbursed the Navy Department from appropriation "Subsistence of the Army, 1900," for fresh beef and mutton delivered from refrigerating ships at Manila, P. I.:

| | |
|---|---|
| Jan. 12, 1900, to appropriation provisions, Navy, Bureau Supplies and Accounts, 1900 | $23,308.85 |
| Jan. 12, 1900, to appropriation provisions, Navy, Bureau Supplies and Accounts, 1900 | 48,116.56 |
| Oct. 16, 1899, to appropriation provisions, Navy, Bureau Supplies and Accounts, 1900 | 23,138.44 |
| May 23, 1900, to appropriation provisions, Navy, Bureau Supplies and Accounts, 1900 | 13,876.07 |
| Aug. 17, 1900, to appropriation provisions, Navy, Bureau Supplies and Accounts, 1900 | 95,560.28 |
| | 204,000.20 |

### FRESH MEAT AND VEGETABLES.

Extracts from correspondence received from Lieut. Col. D. L. Brainard, chief commissary of subsistence, United States Volunteers, chief commissary Department of the Pacific and Eighth Army Corps, Manila, P. I.; also from Capt. Wm. H. Anderson, commissary of subsistence, United States Volunteers, issuing officer to all troops in the Philippine Islands:

[From Lieutenant-Colonel Brainard, October 28, 1898.]

Fresh beef, supplied from Australia, is of excellent quality, and as it comes in a refrigerated ship, keeps indefinitely. In future one-sixth of the cargo should be mutton. This has the same keeping qualities as beef, is cheaper, and makes a welcome change in the diet of the soldier. Native beef is high in price, costing about 12 cents per pound, is of inferior quality as compared to the Australian meat, and the supply is inadequate to the demands of this army.

[From Captain Anderson, November 5, 1898.]

In view of the fact that we have remained in garrison life in Manila for nearly three months, it is natural that a better idea can be formed as to the workings of the present ration than set forth in my letter of September 1. Active campaigning has ceased, the restless volunteer remains to be considered, and the trying climate is always before us. The experiences of the Commissary Department have been unusual, and I think, from the satisfaction expressed in certain quarters, that the work has not been without some reward. This office has done the entire rationing of all the troops at Manila and vicinity since the occupation. Nearly 14,000 men, every one having a different taste, have been rationed, and the contact of this office with the twenty-seven different organizations has given much fruit for reflection.

1. *Meat component.*—In regard to the meat component which from our experience would give the best satisfaction, we would give Australian fresh beef three-tenths, Australian fresh mutton three-tenths, bacon from the United States two-tenths, canned American salmon one-tenth, and either canned American roast beef or canned corn beef one-tenth. The Australian market will always furnish the best article of fresh meats, and the storage in refrigerator ships has so far been successful. * * * In the event these islands are retained, the Government would find the permanent establishment of a cold storage in the city of great advantage. This is something that would not only do away with the detention of an expensive refrigerator ship, but would also give means for the proper storage of many other subsistence stores. * * * It might be added that cattle can be purchased on the islands, but this would not be of as high a grade as the Australian beef. There are also sanitary reasons which would make the use of native beef objectionable.

[From Colonel Brainard, November 12, 1898].

The meat furnished from the storeship *The Duke of Sutherland* is excellent in every respect. It is suggested that one-sixth mutton be supplied with the next invoice from Australia. Mutton is cheaper than beef and would make a welcome change in the diet of the men.

[From Captain Anderson, December 26, 1898.]

It is a great mistake that the present cold-storage ship is not supplied with one-half fresh mutton and one-half fresh beef, or four-sevenths beef and three-seventh mutton. The mutton from Australia is of such an excellent quality, and after being frozen is devoid of strong taste characteristic with mutton. It would be a much appreciated change, and the Government would profit, as mutton is cheaper. * * *

Fresh potatoes and fresh onions as now delivered by Wolfe Brothers, San Francisco, are the finest ever seen in the Philippines. Of the three lots already delivered, amounting to about 200 tons, there has been one crate of bad potatoes, and these were unfortunate in coming in contact with salt water during the voyage. Of course this is not the most trying season of the year, and final judgment should be suspended until the close of a year which will include the hot and wet season. It can be safely said that the United States can not only save money through less wastage, but can also furnish its men with a superior vegetable by the present arrangement. The potatoes and onions are en route about forty days, and during that time there is a shrinkage of about 5 per cent in potatoes and 13 per cent in onions. During the severe season this shrinkage would be slightly increased. The contractors have observed several essential points in their contracts. Careful picking and assorting, good form of crate—octagonal strong crate, and not so large as to allow weight to be felt anywhere through the crates. * * *

When a cold-storage plant is built on the island, the navy boat could be used to transport meat from Australia to Manila, and then discharge her cargo into cold-storage plant and save heavy expenses of holding a storage ship. This office has issued as high as 180,000 rations to the Eighth Army Corps in one day, and the central distributing has proved entirely satisfactory. Troops have never been without rations since the establishment of Camp Dewey.

[From Colonel Brainard, December 27, 1898.]

Relative to a system of cold storage for the preservation of fresh beef for use of the military forces of this command, I have the honor to submit the following remarks:

The method of supplying beef from Australia by refrigerated ship and of retaining the ship in the harbor as a cold-storage magazine, from which stores are drawn as needed, has the objection of being exceedingly expensive in that demurrage must be paid from the time the vessel drops anchor. We are paying at the present time, for this service, $400 per day, which includes all expense connected with the preservation of the meat. Another objection to such a system in this particular place is that during the season of typhoons a whole week of continuous bad weather may prevent launches from going out to the meat ship to secure the supply required for the troops.

In explanation, I will say that no vessels, except those of light draft, from 9 to 11 feet, are unloaded at the wharves of the Pasig River. All others, including our meat ship, are, owing to the shallow water near the mouth of the Pasig, compelled to anchor out in the bay, a mile or more from the city, and are unloaded by means of lighters. During the typhoons the bay is very rough and no lighter will venture out to the ships. While this plan appears cumbersome, it is the only one possible under the present conditions.

For the above reasons the establishment of a cold-storage plant, as suggested in your letter of November 10, is the only solution of the problem of furnishing an adequate and always available supply of fresh beef to the troops serving in Manila.

The plant should have a capacity of about 1,000 tons, equivalent to five months' supply for 20,000 men, and as a measure of economy should be so divided into compartments that those first exhausted of their contents could be cut off from those still occupied, thus reducing to its lowest limit the expenditure of energy required to maintain the plant. The temperature for the beef compartments should be kept down from 15° to 25° F. There should also be a chill room with capacity of, say, 400 tons, having a temperature ranging from 32° to 45°, for the storage and preservation of vegetables, cheese, bacon, ham, and other perishable foods. It is believed that the saving in the vegetable component of the ration alone would pay for maintaining the plant. The entire system, except stone, brick, lime, etc., would have to be brought from San Francisco or other points.

A large vacant space in Binondo, reserved for governmental purposes and located near our main subsistence storehouse, is admirably adapted as a site for the building required. This space for such purpose has an additional value in that it is near the river, where the meat could be unloaded from the lighters directly into the plant.

Another valuable feature in connection with the cold-storage system would be an ice machine from which could be obtained, when required, sufficient ice for the preservation of stores on transports not provided with refrigerated compartments returning hence to the United States, or going to the garrisons which will later be established in some of the other islands. There is only one ice plant in Manila and it does not furnish one-half the ice that could be disposed of here, and a ton of ice could not be purchased from this plant for love or coin.

An ice plant connected with the refrigerated system would place the Subsistence Department on an independent footing as regards other sources of supply, and the saving that would result would be a considerable item to the Government. * * *

In view of the probable occupancy by our forces of several islands comprising the group, it may later become a necessity to establish small cold-storage plants at such important points as may be garrisoned. A refrigerated vessel could then bring a cargo of frozen beef from Australia (a voyage of only eleven or twelve days) and upon arrival here visit the various garrisons and discharge directly into the plants. The vessel could then return leisurely to Australia for another cargo. For the present, however, it is recommended that the Manila plant only be established, as it is probable that small garrisons would have no difficulty in being supplied with fresh meat from the herds of native cattle in the interior of these islands.

The Army should own and control the refrigerated vessel used for the purpose of renewing the beef supplies. The Navy has a vessel of that kind, the *Culgoa*, now in this harbor, from which Admiral Dewey's fleet is supplied.

[From Colonel Brainard, January 12, 1899.]

The vegetables furnished from San Francisco are excellent in every respect. Being the very best in the market, carefully crated and stowed, the various invoices have arrived in perfect condition and are keeping well. The first lot reached here December 6, and to this date only one crate of potatoes has been returned to the issuing commissary in bad condition, and it was stowed in such a position as to be brought in contact with sea water at some stage of the voyage. I have already renewed the contract for these potatoes, thus extending it to June 30. There is no prospect at present of obtaining the native vegetables of this country in sufficient quantity to supply the command. * * *

The order directing me to pay the demurrage on our store ship, the *Duke of Sutherland*, was revoked at my request, a week or so after it was issued, and the chief quartermaster was directed to make all future payments and to refund to the Subsistence Department the amount that had been paid under the original order.

I wrote you fully last week relative to the refrigerating plant which you contemplate having erected at this place, and made recommendation as to storage capacity, temperature, etc., deemed necessary for preserving in a satisfactory condition such supplies as are kept in stock from time to time. Further investigation of this subject has not caused me to alter any of the recommendations made except as to the chill room for perishable articles, which should have a capacity of 500 tons instead of 400 tons.

[From Major Brainard, commissary of subsistence, Volunteers, May 6, 1899.]

I am led to believe that beef on the hoof can never be handled with satisfaction in this climate, and especially when troops have been accustomed to the use of the frozen article.

[From Major Brainard, commissary of subsistence, Volunteers, to adjutant-general, Department of the Pacific, August 9, 1899.]

The last issue of frozen Australia beef was made July 3. This consumed all the beef on hand except a few tons which were held for use of the hospitals should circumstances demand it. Having been informed by the naval officials that their vessel, the *Glacier*, could not reach here until July 16, arrangements were made for a refrigerated steamer to supply the army in the interim, but an unfortunate breakdown prevented its arrival as expected. In this emergency arrangements were made for a supply of live cattle, and they were slaughtered here and immediately transferred to the *Duke of Westminster*, where they were placed in the cooling rooms and frozen. This meat was issued after it had been thoroughly frozen. It was of good quality and every care was exercised that none but that of prime quality be issued. However, it was not looked upon with favor by the troops, who were accustomed to the frozen Australian product, with which no other meat compares, and many of the organizations refused this beef, and to prevent loss it was immediately sold at auction. No further issues of it were attempted, and the command was necessarily without fresh beef from the 7th to the 17th, the date when the first issue was made from the naval vessel *Glacier*. This vessel brought a cargo of frozen beef from New York. This American beef is of good quality, but it is not equal to the Australian beef. In America the second quality is used, while in Australia only that of first quality is prepared for the export trade. As the Navy now has three cold-storage vessels in these waters, it is thought that the supply of frozen beef will not again become exhausted. Considerable difficulty was also had in procuring an adequate supply of beef for the command at Iloilo, though every effort was made to keep them supplied, and every available opportunity to purchase and ship was embraced. This matter will be permanently and satisfactorily adjusted upon the arrival of a cold-storage vessel—the *Bungaree*—expected to reach Iloilo about September 15. The other commands in the Viscayan military district purchase their own cattle, slaughtering them as required, and no complaints are received.

Maj. Gen. E. S. Otis, U. S. A., commanding general, Division of the Philippines, in his annual report covering the period from September 1, 1899, to May 5, 1900, states as follows:

> In the dispersion of our army of 60,000 men throughout the Philippines the labor attending dispersion and supply became very great. * * * Notwithstanding the multitude of demands presented, there are no instances in which troops, however circumstanced, have not received abundant food supplies, except when, in rapid pursuit of a fleeing enemy, the wheeled transportation furnished them was temporarily abandoned. * * * This fact in itself shows the competency of officers connected with the departments of supply, and no further proof is required to establish their efficiency and unremitting attention to duty. The ability, marked efficiency, and zeal of officers of this army may be judged by the vast results accomplished.

### FROZEN FRESH BEEF AND MUTTON.

The following elaborate and interesting report prepared by C. R. Krauthoff, captain, assistant commissary of subsistence, United States Volunteers, dated Manila, P. I., January 10, 1900, on the method of supplying United States troops in Manila and vicinity with fresh beef and mutton, is herewith published:

*Source of supply.*—Fresh beef and mutton for use of the troops has been purchased under various conditions. The first cargo was purchased by the American consul in Australia, and was sent to this port some time about the latter part of August, 1898, on the cold-storage ship *Duke of Sutherland*. This cargo lasted until about April, 1899. After this cargo was exhausted the United States Navy supply ship *Culgoa* furnished the army with frozen beef and mutton for a short period, when another cargo was purchased by the army and brought to this port on the *Duke of Westminster*. After this cargo was used up, the army again received its supply from the United States Navy supply ship *Glacier*, which sailed from New York and arrived here about July 16, 1899. The *Glacier* had a cargo of fresh beef and mutton which was furnished by the firm of Swartzschild & Sulzberger, New York and Kansas City. After this supply was exhausted the Australian ship *Maori King* came into the harbor with a cargo of frozen beef and mutton. This boat was delayed. Her owners' intentions were that she should arrive before the *Duke of Westminster's* cargo was exhausted and before the arrival of the *Glacier*, but on account of delays and the grounding of the *Maori King* on Thursday Island she came too late, and for a short period the supply was very limited. After consultation with Admiral Watson as to the supply on hand, General Otis approved a contract by which the cargo of the *Maori King* was purchased. This cargo consisted of 750 tons and was purchased at 7 cents per pound, with no demurrage charges until after December 3. This cargo was not exhausted by that date, and Admiral Watson permitted the remainder of the cargo to be transferred to the United States Navy supply ship *Culgoa*. The cargo transferred to the *Culgoa* has been exhausted and the army is again receiving its supply from the United States Navy supply ship *Glacier*.

*Method of storing on ships.*—The quarters are packed in layers in the hold of the vessel, which is divided in a number of cold-storage chambers. The temperature of these chambers is kept below freezing, so that when the meat is taken out it is hard frozen. The manner of packing the quarters permits a vessel to carry a large supply, depending upon the size of the ship, the average being about 1,500 tons, full capacity.

*Method of taking fresh meat from the ships for issue.*—Organizations receive instructions to send their estimates for the quantity of fresh meat before 12 o'clock preceding the morning of issue—this to prevent taking too much meat off the ship. The estimates and the amount required for sale are consolidated and the quantity is drawn by the sergeant in charge of fresh-meat issues. The meat is taken off the ship in the afternoon and stored in a lorcha, a large closed barge similar to a canal boat. The meat is closely packed, then covered with several paulins, and the lorcha closed up. This lorcha and a splendid launch is furnished by the Quartermaster's Department. The lorcha is towed from the ship to the storehouses on the Pasig River, and the issues are made from the lorcha—this to prevent rehandling.

*Method of shipping fresh beef, etc.*—Troops stationed in the city and vicinity draw their fresh beef direct from the depot, and transport it to their barracks or camps by wagons, one-horse carts, bull carts, etc. The issues commence at 6 o'clock in the morning, and they get their supply before the sun is too warm. Troops stationed on the Pasig River and Laguna de Bay are supplied by shipping on a launch which leaves Manila every other day. The quarters are packed on the launch, each marked for the organization intended, and packed so that the first off is put on last. The whole is covered by a paulin, and the beef reaches its destination hard frozen and in good order. In this manner troops at San Pedro Macati, Pasig, Calamba, and Los Banos receive their supply. Another launch makes a daily trip to Bacoor and Paranaque on the south lines. The fresh meat is sent in the same manner as up the Pasig, etc. At Bacoor transportation meets the boat and takes the fresh meat for the troops stationed at Imus and on the Zapote River. The troops and hospital at Corregidor Island also receive their fresh meat by launch, which makes daily trips.

The greatest means of supplying troops is the Manila and Dagupan railroad operated by the Quartermaster's Department. There is a train leaving Manila every morning at 9 o'clock, arriving at Dagupan about 6 p. m. There is a regiment stationed at points along and near the railroad from Calumpit to Manila. This regiment draws its fresh meat and cuts it up for different detachments and companies and distributes it from a car as the train stops at the different towns. In addition, this depot has two cars which go up every morning. One is for fresh meat and one for fresh bread. These cars are in charge of one man, detailed on special duty in the Subsistence Department, who attends to the distribution of supplies along the railroad and for points where supplies are reshipped. These cars carry supplies for troops at Malolos, and transportation meets the train and receives the fresh beef or mutton for the troops stationed at Quingua, Baliuag, etc., Baliuag being about 14 miles from Malolos. At Calumpit fresh meat is reshipped by launch to Macabebe, San Luis, Candaba, and Arayat. At San Fernando there is a depot, and a shipment is made to the commissary at that point, who issues fresh meat to all organizations in the vicinity. A similar depot is at Angeles, where shipments are made to the commissary for distribution to troops stationed there and in the vicinity. Fresh beef has also been shipped to Orani by launch, and arrived there in good shape. An experiment was made by sending fresh beef to San Mateo, and the commissary reports that it arrived in good shape and would have kept fifteen hours longer. On last Monday a shipment of fresh beef was made to Bocave, on the railroad, and reshipped to Norzagaray by wagon transportation. Major Short reports that it arrived in a frozen condition. Troops at Dagupan and vicinity, and troops along the railroad and points off the road, are supplied with fresh beef from a refrigerator car which is sent from this depot. This car was built by the Quartermaster's Department upon the request of the depot commissary. It will hold about 10 tons fresh beef and 6,000 pounds ice. It has two compartments, and the meat keeps in excellent condition until exhausted. This car is sent back on the day which the last beef is taken out, and on that night is restocked with beef and ice and sent up on the 9 a. m. train, so that troops are only without fresh beef one issue. Another car will be built, and then even greater facility will be at hand to expedite the supply. Captain Logan reports the car a great success. In all of the foregoing shipments they are practically made to points of distribution, and the meat is sent from these points still farther out to companies stationed at villages and at outposts, etc.

*Manner of packing the fresh beef and mutton for shipment.*—In packing frozen fresh meat, the object is to exclude the air, and the closer packed the better it keeps. When fresh meat is sent to organizations serving in the city no protection is necessary, as the beef is too hard frozen when issued for early consumption. When sent out a distance from the depot protection is necessary from the sun. The quarters are closely packed on wagons or carts and covered with canvas. When carried on pack mules the quarters are cut and the pieces wrapped in small pieces of canvas. When sent out on cars for local delivery the quarters are closely packed in an ordinary box car and the doors kept closed, except when meat is taken out. When stored in the

[illegible] OF WAR

rigerator car the quarters are closely packed and piled so that all space is filled. is a peculiar fact, but the fresh meat helps to preserve the ice, for when the ice is st put in the car it melts very rapidly. As soon as the car is filled with frozen eat the ice melts very slowly. Six thousand pounds of ice preserves 20,000 pounds f fresh meat for five or six days.

*Keeping qualities.*—Under favorable conditions and if it is properly cared for, meat will keep in good condition for seventy-two hours after being taken from the ship. It will keep under unfavorable conditions forty-eight hours. During the period from February 1, 1899, to December 31, 1899, the following issues, sales, and transfers have been made: Fresh beef, 5,234,171 pounds; fresh mutton, 510,013 pounds. In handling this quantity there was lost to the United States on account of spoiling: Fresh beef, 3,082 pounds; fresh mutton, 2,552 pounds.

The issues, etc., were made during an active campaign and the losses were caused by shipping fresh meat to organizations which had suddenly changed stations, or transportation breaking down. As to the distance that meat can be transported, depends entirely upon the time required. Fresh meat is shipped on the railroad 147 miles. It is also shipped by wagon transportation from 15 to 20 miles from the railroad and by launch 35 miles from the depot. Hind quarters keep better than fores and fresh beef keeps better than mutton. This on account of the bulk of meat. The lighter the weights the quicker it thaws.

*Quality.*—The quality of the fresh beef and mutton may be classed as export beef or mutton. It is first class in quality, inspected by experts and slaughtered and dressed in the very best manner. The meat is tender and very palatable. The main trouble in cooking the fresh meat is that inexperienced persons attempt to cook the meat while still frozen, or while the interior of the meat is very cold. From experiments made it is best when practicable, to let the quarters hang in a moderately cool room about thirty-six hours before using.

The accompanying map shows points to which shipments were made.

### COLD STORAGE AT MANILA, CEBU, ILOILO, AND JOLO.

On October 10, 1899, this bureau communicated with the Quartermaster's Department to know what steps, if any, had been taken to provide means to protect the subsistence stores from depreciation and great loss at Iloilo, Jolo, and Cebu, P. I., the climatic conditions at those places being considered such as to necessitate the erection of refrigerating plants. Not receiving any information upon the subject, this office, on December 16, 1899, asked the chief commissary, Department of the Pacific and Eighth Army Corps, at Manila, to report what steps had been taken to provide cold-storage facilities required by the Subsistence Department in Manila, and in Iloilo, Jolo, and Cebu, and if the cold storage at those places had been contracted for when the plants were likely to be finished. To which Maj. Edward E. Dravo, commissary of subsistence, United States Army, chief commissary, Division of the Philippines, on July 19, 1900, reported as follows:

> The Government plant at Manila will not be finished for some time, probably not for eighteen months or even longer, as the foundation is not yet completed. A small plant sufficient for a number of articles of the most perishable varieties of stores has been purchased here of a Mr. Evans for our use, it, after a month's trial, having been found very satisfactory in every way. It has a cold-storage room 60 by 30 by 10 feet.

### FROZEN MEAT FOR USE IN AN ARMY.

The foregoing correspondence shows the success achieved by the use of frozen meats for the troops in the Philippines, and it may be of interest to go into the subject and indicate the origin of the application of the method of preservation by cold to the meat supply of an army.

In 1874, M. Tellier, civil engineer at Auteuil, France, and M. Bouley, inspector-general of the veterinary schools in France, called attention to the commercial methods of shipping meat preserved by cold dry air, and stated that such meat could be kept in good condition for about six weeks. In 1888, Dussutour, referring to the results of the experiments of Tellier and Bouley, pointed out the advantages which would result by the application of the system of preserving meat by cold to the supply of an army. Since 1888 considerable attention has been given to this question in France, and the following instructions have been issued by the French minister of war:

> There are three methods of preserving meat by means of cold—the method for the short, medium, and long period.
>
> I. *Short periods.*—The method termed the short period enables the meat to be kept about twenty days. The meat to be kept for a short period is subjected, in a dry place, to a low temperature which varies from 37.4° F. to 26.6° F., depending upon whether the duration of the conservation is to be for several days or for two or three weeks.
>
> *II. The medium period, or slow freezing.*—Meat freezes about 24.8° F. If the temperature of the surrounding air falls to that point, the meat is frozen, at least in the superficial parts, but not deeply at first, and its length of conservation, considerably increased, may extend to ninety days. The superficial freezing extends progressively to the inner layers of the meat and finally the central portions are affected. But at this temperature (24.8° F.) thorough freezing is only slowly accomplished, from which fact the name of this method is derived. Thus treated, meat retains all the qualities of fresh meat for three months.
>
> *III. Long period.*—When it is necessary to keep the meat for more than three months, the freezing must extend, from the beginning of the treatment, not only to the outer layers but to the inner portions of the meat, and it must be frozen solidly. Experiments show that to attain this result with certainty it is absolutely necessary to lower the temperature of the central portion of the meat to 14° F., which necessitates subjecting the meat to a temperature from −4° F. to −13° F., because of the resistance the meat offers to the penetration of cold.
>
> Meat thus solidly frozen may be kept for six months or, so to speak, indefinitely. It regains, when thawed out, the appearance, taste, and all the qualities of fresh meat.
>
> Once solidly frozen, in order to keep the meat it is only necessary to treat it in the manner described for the second period, that is, to put it in a dry place, the temperature of which is maintained at 24.8° F.

Major Baldwin, purchasing commissary, San Francisco, Cal., reports:

> Every Government-owned transport is now supplied with frozen beef. When a Government-owned boat starts out with an unusually large number of troops the first six days' supply is sometimes placed on board chilled in a separate room from the frozen. The refrigerating plants here place the beef in the freezing room at about 15° F., lower the temperature to 6° F., and no meat is accepted that has not been in the room six days. The meat is then examined by sawing through the thickest parts. If frozen satisfactorily it is accepted.

From the foregoing report of Major Baldwin, it is seen that the meat is frozen by the second method described above.

From the correspondence above, it is seen that the frozen meat used in Manila is procured in Australia. In May, 1898, the State Department issued a consular report on the "Frozen-Meat Trade of Australasia and the Argentine," in which the following occurs:

> *Preparation for export.*—After separating the heart, kidneys, tongue, etc., leaving only the bare carcass, the meat is subjected to the freezing process, 15° to 20° F. below zero, about 50° of freezing being applied. When thoroughly hard, the carcass is sewn up in thin cotton cloth and transferred to the refrigerating chambers in steamship.

The statement that the meat is subjected to the freezing process, 15° to 20° F. below zero, makes it manifest that the meat is frozen by the third method above described.

### HOT ROAST BEEF ON THE FIRING LINE IN THE PHILIPPINES.

The following complimentary allusion to the Subsistence Department by Lieut. Terruccio Vitale, of the Italian army, military attaché to the national embassy at Washington during the Spanish war, and who went to Manila with the United States troops, is taken from an article which appeared in the Journal of the Royal United Service Institution (Vol. XLIV, July 16, 1900, No. 269, pp. 828–29):

> What pleased me probably more than anything else was the sight of serving hot roast beef to the soldiers on the firing line out in the Philippine Islands, miles and miles away from the military depots. The Commissary Department of your war office has been criticised very harshly, but when you consider what it means to feed soldiers on the firing line with hot roast beef you will agree with me that it is a feat which few armies can boast of. All the time I have spent in the Philippine Islands I have lived and messed with the officers, have watched closely how the troops fared, and I must say that the Commissary Department did splendid work.

### THE RATION IN THE PHILIPPINES—UNITED STATES TROOPS.

[Extract from report of Maj. W. D. Beach, inspector-general, United States Volunteers, made February 2, 1900, in connection with his work as inspector-general of the First Division under General Lawton.]

The ration is sufficient and excellent, but it was impossible under the conditions to which the troops were subjected in this campaign to keep those at the extreme front fully supplied with even bacon, coffee, sugar, and hard bread. This, however, was no fault of the Subsistence Department.

The emergency ration was used during six consecutive days by myself and my detachment, but fortunately we had a little coffee, bacon, and sugar with which to eke out, so that it did not grow very distasteful. As a rule the men dislike it, but for the purpose intended it is excellent. About 10 per cent of what we carried was spoiled by reason of the cans being poorly soldered, although the fact of its being bad was not discovered until the cans were opened. The tin cases in which the hard bread was packed proved of the greatest possible advantage.

[Extract from report of First Lieut. Louis H. Bash, Thirteenth Infantry, commanding provisional brigade, operations in province of Cavite, Luzon, P. I., October 8 to 14, 1899.]

Throughout the expedition all rations received and issued by me were of excellent quality. * * * The country through which we passed was very rich—rice, sugar, salt, pigs, and chickens being found in profusion. In my opinion, had plenty of hard bread, bacon, sugar, and coffee been issued to the troops, they could have lived upon the country and fared well. In a future expedition of this sort, where transportation is limited, this is the course I should recommend, in addition, giving the commissary authority to purchase such supplies as may be needful.

### THE RATION FOR INDIAN POLICE, PRISONERS OF WAR, STRETCHER BEARERS, AND NATIVE AND CHINESE LINEMEN EMPLOYED FOR SIGNAL WORK.

The following is the ration for one day for Indian police, prisoners of war, stretcher bearers, and native and Chinese linemen employed on signal work, as approved by the Major-General commanding the Department of the Pacific and Eighth Army Corps:

| | | |
|---|---|---|
| Rice | pounds | 2 |
| Meat, fresh | do | $\frac{3}{4}$ |
| Or bacon or pork | do | $\frac{3}{4}$ |
| Or canned or salt beef | do | $\frac{3}{4}$ |
| Or salmon | do | $\frac{3}{4}$ |
| Coffee | do | $\frac{1}{40}$ |
| Sugar | do | $\frac{1}{25}$ |
| Salt | do | $\frac{1}{30}$ |
| Soap | ounce | $\frac{8}{25}$ |
| Vinegar | gill | $\frac{2}{25}$ |

The meat component is issued in the following proportions when practicable: Fresh meat, three days in ten; bacon, one day in ten; salmon, one day in ten, and roast beef, canned, five days in ten; or the last two may be issued as follows: Salmon, three days, and roast beef, canned, three days in ten.

## THE SPANISH RATION FOR NATIVE SOLDIERS AND THE RATION ISSUED TO SPANISH PRISONERS OF WAR.

On January 20, 1899, Col. D. L. Brainard, chief commissary, Department of the Pacific and Eighth Army Corps, at Manila, P. I., reported as follows:

I have the honor to inclose herewith a list of the rations issued by the subsistence department of the Spanish Army in these islands to its native troops. As will be seen, the rations are in three groups, which vary only in their meat component, each group possessing all the nutritive materials necessary to perfect health for the native soldier, who, from childhood, has subsisted chiefly on a rice diet supplemented by fresh or dried fish.

The mongos is a small native pea, and is made a part of each group of the authorized ration. It is always obtainable in the Philippines under normal conditions. In groups two and three vinegar is added for use in connection with the jerked beef and dried fish. The rice forming a part of the above ration is always the native article and is of second quality.

I was informed by the chief commissary of the Spanish forces here that the groups were interchangeable, and had been devised on the assumption that the component parts of some one particular group would always be obtainable in or about Manila.

I send you also a list of the ration approved by the commanding general, Department of the Pacific and Eighth Army Corps, for issue to such of the Spanish prisoners of war as belonged to the native forces in this city. This ration is practically the same in quantity as that adopted by the Spanish authorities for the Filipino soldier, but it is generally much better in quality. The Filipino soldiers have grown fat, sleek, and healthy on this ration. They have made considerable in the way of savings, and have expressed themselves many times as being much better fed under our system than under the Spanish régime, which prevailed prior to August 13 last.

Should the United States retain these islands and authorize the establishment of a native army, it is recommended that this ration, or a modification of it, be adopted for use. It is adapted to a tropical climate; it has given satisfaction to the soldier, and its cost is less than 14 cents per man per day, and this at a time when prices are unusually high, owing to the fact that the cheaper native products from the interior of the island are cut off by a not too obliging insurgent army.

The list marked "European" is the daily ration issued to the Spanish prisoners of war. The soldiers have expressed themselves as well satisfied with the variety, quality, and quantity of this ration, and have made large savings.

*Ration authorized by Spanish army for native soldiers in Philippine Islands.*

| No. 1. | | | No. 2. | | | No. 3. | | |
|---|---|---|---|---|---|---|---|---|
| Rice | liter | 0.95 | Rice | liter | 0.95 | Rice | liter | 0.95 |
| Meat, fresh | kilogram | .350 | Jerked beef | kilogram | .100 | Fish, dry or fresh | kilogram | .150 |
| Salt | do | .008 | Vinegar | liter | .01 | Vinegar | liter | .01 |
| Lard | do | .020 | Lard | kilogram | .020 | Lard | kilogram | .020 |
| Mongos (pea) | liter | .140 | Mongos | liter | .140 | Mongos | liter | .140 |
| Coffee | kilogram | .010 | Coffee | kilogram | .010 | Coffee | kilogram | .010 |
| Sugar | do | .020 | Sugar | do | .020 | Sugar | do | .020 |

*Daily ration issued by the United States Subsistence Department to the Spanish prisoners of war.*

| To native soldiers (Filipinos). | | | To Spanish soldiers (European). | | |
|---|---|---|---|---|---|
| Rice | pounds | 2 | Bread or flour | pound | 1 |
| Meat, fresh | do | 3/4 | Meat, fresh | do | 1 |
| or salmon | do | 3/4 | or salmon | do | 1 |
| or bacon or pork | do | 3/4 | or bacon or pork | do | 3/4 |
| or canned or salt beef | do | 3/4 | or canned or salt beef | do | 3/4 |
| Salt | do | 1/50 | Salt | do | 1/50 |
| Lard | do | 1/25 | Peas or beans | do | 1/25 |
| Mongos | do | 1/4 | Coffee | do | 1/20 |
| Coffee | do | 1/20 | Sugar | do | 1/25 |
| Sugar | do | 1/25 | Wine | pint | 1 |
| Vinegar (per 100 rations) | gallons | 1/4 | | | |

Capt. S. B. Bootes, assistant commissary of subsistence, who, on August 23, 1898, was placed in charge of subsistence of all Spanish prisoners of war, and continued from time to time on that duty until July 20, 1899, says, in a report rendered by him to the Chief Commissary Department of the Pacific and Eighth Army Corps, dated August 10, 1899:

> As regards the work in connection with the subsistence of Spanish prisoners of war, I have the honor to submit the following:
>
> When I took charge of the work there were 13,382 Spanish soldiers reported for rations. Of these 8,601 were European and 4,781 natives. Twelve thousand and eighty-nine were for duty, and about 10 per cent (1,293) were in the hospital.
>
> The rations were from lists made up by me and approved by the commanding general, and were as nearly like the rations issued by the Spanish as possible. They were of two classes—one for Europeans and one for natives. [See lists in Colonel Brainard's report of January 20, 1899, above.] The components were purchased in open market from the lowest bidder, preference being given to the Subsistence Department and American merchants, quality and price being equal. It was hard to figure the exact cost per ration on account of the stores turned over by the Spaniards being used as long as possible before any purchases of these components were made. But by figuring the amount of stores captured at the average prices per ration of both European and native rations, the cost was 29 and a fraction cents, Mexican silver, or about 15 cents gold per man per day.
>
> The average does not include the cost of those in hospital to whom was paid the sum of 75 cents Mexican silver, or 37½ cents gold, per man per day; and in addition to the above I paid for the washing of all hospital linen, furnished necessary medicine, oil for lighting, and fuel for cooking. (All the above in lieu of rations in kind.)
>
> The Spanish officers, both naval and military, declined to receive rations, though I informed them they were entitled to them, and could draw them either in kind or commutation. Such notification and declination are on file as matter of record.

### CHINA RELIEF EXPEDITION.

Early in July, 1900, it became necessary to send an expedition to China to relieve the members of the United States legation at Pekin. Two regiments of infantry and a battery of light artillery were sent from the Division of the Philippines. These troops were amply provided with subsistence stores, including articles of the ration and stores for sales, by the chief commissary at Manila. Other troops were ordered to China from garrisons in this country, and rations and stores for sales were liberally provided for them. Preparations were made to ship the necessary stores to China to supply the troops there during the winter. The fall of Pekin and the relief of the legations rendered possible the withdrawal of all troops there except a sufficient number retained as legation guard.

The supply of the troops in China was largely provided through the depot in Manila and from the depot at San Francisco, under the supervision of Colonel Woodruff, the chief commissary of the Division of the Philippines, and Major Baldwin, depot commissary at San Francisco, to whom great credit is due for the successful work accomplished. The immediate work with the troops in the field in China was performed by Major Gallagher, the chief commissary of the expedition, and Captain Ramsey, of the Ninth Infantry, who are entitled to great praise for the successful work accomplished by them. The official and private reports from China show that this Department successfully met every requirement there, and many complimentary remarks have been made regarding the amount and quality of the stores shipped. The work connected with the China relief expedition falls properly in the current fiscal year and will be treated of fully in my next annual report.

### SERVICES OF THE SUBSISTENCE DEPARTMENT IN ALASKA.

By General Orders, No. 8, Headquarters of the Army, January 19, 1900, that portion of the Department of the Columbia embracing the territorial limits of Alaska was created a military department known as the Department of Alaska, and embraced the following posts: Circle, Cape Nome (now Fort Davis), Fort Egbert at Eagle, Fort Gibbon, Tanana, Valdez, Rampart, Skagway, and Fort St. Michael.

All of these posts have been well provided with subsistence supplies from Vancouver Barracks, Wash., by Maj. Jas. N. Allison, commissary of subsistence, chief commissary, Department of the Columbia. In order that this office might be fully informed concerning the supply of the Department of Alaska, Maj. A. L. Smith, commissary of subsistence, United States Army, an assistant in this office, was, by Special Order 112, Headquarters of the Army, May 12, 1900, sent to Seattle, Wash., for the purpose of obtaining the necessary detailed information.

#### THE RATION IN ALASKA.

On the 25th of March, 1900, I recommended that the allowance of certain articles of the ration for troops serving in the Department of Alaska be increased. This was approved by the Secretary of War and appeared in General Orders, No. 46, Headquarters of the Army, April 7, 1900, as follows:

WAR DEPARTMENT, *Washington, April 6, 1900.*

Under the authority vested in him by section 1146, Revised Statutes, the President hereby increases the allowance of the following component parts of the ration for the troops serving in the Department of Alaska, such increase being considered necessary on account of the severity of the climate in that Department, viz:

Bacon, issue—1 pound per ration, instead of three-fourths pound now allowed.
Fresh vegetables—1½ pounds per ration, instead of 1 pound now allowed.
Sugar, issue—20 pounds per 100 rations, instead of 15 pounds now allowed.

ELIHU ROOT, *Secretary of War.*

On September 24, 1900, the Acting Secretary of War approved the increase of the ration of desiccated vegetables for troops serving in Alaska from 2.4 to 3.6 ounces per ration.

#### ISSUE OF RATIONS TO ARMY OFFICERS IN ALASKA.

On April 11, 1900, this office recommended to the Secretary of War that on account of the excessive cost of living necessary legislation be obtained authorizing the issue, free of cost, of one ration daily to any officer of the Army while serving in Alaska or outside of the limits of the United States. The Acting Secretary of War, on May 1, 1900, sent the following communication relating to the cost of living in Alaska to the Speaker of the House of Representatives, viz:

WAR DEPARTMENT, *Washington, May 1, 1900.*

SIR: The Acting Commissary-General of Subsistence, in a letter of 5th ultimo, calls attention to the fact that Maj. James N. Allison, commissary of subsistence, chief commissary Department of the Columbia, and purchasing commissary at Vancouver Barracks, Wash., reports that in all probability the contract price for beef for troops in the Department of Alaska will be very high, probably as much as 50 cents per pound, and that if officers are compelled to pay such excessive prices for meat the cost of living in Alaska will be very high.

In view of the fact that the law does not permit the issue of rations to officers, and provides that sales of subsistence stores shall be made to them at cost price, the Acting Commissary-General recommends that legislation be obtained authorizing the issue, free of cost, "of one ration daily to every officer of the Army while serving in Alaska."

It is expected that about 45 officers will be stationed in the Department of Alaska and 16,425 rations will therefore be required yearly. As the ration issued to troops in the Department of Alaska will cost approximately about 48.7 cents per diem, the cost of issuing rations to officers in that department each year (at the estimated number of 16,425 rations) will be $7,998.98.

Very respectfully,
G. D. MEIKLEJOHN,
*Acting Secretary of War.*

This communication was printed as Doc. No. 651, House of Representatives, Fifty-sixth Congress, first session, and was on May 2, 1900, referred to the House Committee on Military Affairs. It does not appear that it has thus far been acted upon by that committee.

### DESTITUTION IN ALASKA.

On the recommendation of the Acting Secretary of the Interior the Assistant Secretary of War on August 15, 1899, authorized the issue of rations to destitute Alaskan Indians, not to exceed 60 in number, of the Copper River district, for a period not exceeding ninety days. Issues were made to these Indians amounting in money value to $288.81.

On September 7, 1899, Capt. Edwin F. Glenn, Twenty-fifth Infantry, applied from Tyoonok, Alaska, for a long list of antiscorbutics (20 items) for issue to sick and destitute people in Cooks Inlet mining region, many of the items delicacies, but the Secretary of War on September 8, 1899, declined to authorize the issue; and on September 19, 1899, the following was issued in Circular No. 45, Headquarters of the Army, viz:

> By direction of the Secretary of War, the further purchases of subsistence stores for gratuitous distribution to destitute persons in Alaska will not be made, and commanding officers in all parts of that Territory will be held to a strict compliance with paragraph 1267 of the Regulations in each case of relief reported as made on their orders.

### ARMY TRANSPORT SERVICE.

On November 1, 1899, this office recommended to the Secretary of War that a board of officers, to consist of one officer each from the Inspector-General's Department, the Quartermaster's Department, the Subsistence Department, the Medical Department, and the line of the Army, be appointed to meet at New York City at the earliest date practicable to consider proposed changes in and additions to the regulations for the army transport service. Such a board was appointed by paragraph 21, Special Order No. 293, Headquarters of the Army, December 18, 1899, consisting of Col. Charles A. Woodruff, Subsistence Department; Maj. Henry S. Kilbourne, Medical Department; Maj. Francis B. Jones, Quartermaster's Department, and directed to meet at the Army Building, New York City, N. Y., at 10 o'clock a. m. December 20, 1899, or as soon thereafter as practicable, for the purpose of considering proposed changes in and additions to the regulations for the army transport service.

The new regulations having been submitted by the board, and having been revised by the Quartermaster-General and the Acting Commissary-General of Subsistence, were approved by the Secretary of War on May 5, 1900, and distribution was made of same May 28, 1900.

### REPORTS OF OFFICERS ON TRANSPORTS.

[Extracts from reports of Col. H. B. Mulford, First Nebraska Volunteer Infantry, United States transport *Hancock*, at sea, July 10, 1899.]

There has been no cause for complaint, with very few exceptions, either in the quantity or quality of the rations issued, which have been wonderfully well prepared and served, considering the limited facilities provided for the large number of men carried upon transports.

YOKOHAMA, *July 14, 1899.*

There was considerable complaint from the men regarding quantity and quality of rations for the first three or four meals out of Nagasaki, which complaint, upon investigation, proved to be well grounded, and seemed to be due to carelessness upon the part of the ship's cooks and bakers, and the cooks being suspected of selling some of the rations instead of cooking same, a sentry was placed over the cook house to prevent any sales, and Lieutenant White, regimental commissary officer, was placed in direct charge of the cook, in addition to his other duties. Since then no complaints have been made, and everything has run smoothly.

[Extract from report of Col. E. Rice, Twenty-sixth Regiment Infantry Volunteers, United States transport *Grant*, October 23, 1899.]

The table for the officers has been of the best, and the service excellent. Subsistence for the men has been of abundant and good quality, varied, and well cooked.

[Extract from report of Col. E. J. McClernand, Forty-fourth United States Volunteer Infantry, United States transport *Hancock*, at sea, December 16, 1899.]

It is believed if those submitted (bills of fare) from different regiments were compared by one officer an order might be promulgated setting forth the greatest variety of ways to prepare the ration aboard ship. Curry, to be eaten with rice, would be a valuable addition to the ration as troops enter the tropics, because of its digestive properties.

[Extract from report of Inspector-General Maj. P. W. West, United States Volunteers, on inspection of the United States army transport *Sherman*, made during the voyage of ship from San Francisco to Manila, P. I., September 23 to October 21, 1899.]

The characrer of the food and the method of serving it to the troops while on a long voyage demands special study. Life on shipboard is very monotonous and the soldier has little to do except wait for the next meal, and the result is he soon tires of the food furnished him. The ration furnished is ample; but I deem it quite essential that a special transport ration be supplied containing a greater variety of articles than that now furnished.

[Extract from report of an inspection of the United States transport *Meade*, made during the voyage from New York to Manila, in November and December, 1899, by Maj. S. C. Mills, inspector-general.]

The Commissary Department has met the requirements of the transport service with the same success it habitually shows. The men have been well fed during the voyage. I would recommend the issue of jams and canned fruits to troops at sea. The saloon table has been entirely satisfactory. We have lived as well as do the first-class passengers of the ordinary ocean liner. The transport commissary is given great latitude by the Department, and he has used it in a way which has produced a fine result.

[Extract from report of an inspection of United States army transport *Hancock*, made January 11, 1900, by Lieut. Col. E. A. Garlington, inspector-general, Department of Pacific and Eighth Army Corps.]

The stores furnished are generally of good quality; some deterioration observed, principally perishable stores—fresh vegetables.

[Extract from report of Maj. C. D. Cowles, Seventeenth Infantry, dated Manila, P. I., March 14, 1900, concerning voyage of transport *Sherman* from San Francisco to Manila.]

The accommodation, food, and health of the troops under my command were excellent during the voyage from San Francisco, Cal., to Manila, P. I., February 17 to March 14, 1900, on the United States army transport *Sherman*, Capt. James C. Read, commissary of subsistence, United States Volunteers, transport quartermaster, and C. H. Grant, master, together with all employees of the *Sherman*, were at all times courteous and attentive to their duties, which they performed in an efficient and satisfactory manner.

[From report of Capt. W. M. Coulling, assistant quartermaster, United States Volunteers, on United States army transport *Sheridan*, dated at sea, March 25, 1900, concerning the work of the ship during the twelve months ending February 18, 1900.]

In the matter of feeding officers and men it gives me pleasure to state that there has been general satisfaction in this respect, and I think the ship has been a credit to the Subsistence Department. The supplies, with very minor exceptions, have been excellent.

[Extract from a report of Capt. E. F. Glenn, Twenty-fifth Infantry, dated Manila, P. I., March 27, 1900, concerning the voyage of the transport *Thomas*, which left San Francisco March 1, and arrived at Manila March 27, 1900.]

The food supplied to the cabin passengers has been not only ample as to quality, but also as to variety. Although all of the meats and fresh vegetables have necessarily been kept in cold storage, they have seemed to lose nothing of freshness or flavor. I was specially careful to frequently taste each variety of both articles mentioned, and consider it rather remarkable that both should have been so uniformly fresh and palatable. The only instance of taint of any kind was in the case of some tripe served at lunch upon one occasion. This was not so much tainted, however, as to be unpalatable. The food at all times was well prepared and the service was satisfactory.

In addition to the daily inspection of the forenoon, an additional inspection of every meal served to the troops during the trip was made by an acting assistant surgeon of the command and of which a written report, containing the menu, the complaints, if any, and any comments by the inspecting officer, was required. These reports contain no complaints and none were submitted to me. From these and from personal knowledge I am glad to be able to state that the food served to the troops was all that could be desired. The limited number of troops and passengers rendered it practicable to vary the usual routine of boiled meats with roasts as often as desired. The bread prepared in the bakery was unusually uniform and good, being severed [served] alike in the saloon and mess room.

[Extract from report on voyage of the transport *Sheridan* from Manila to San Francisco, Cal., dated April 1, 1900, by Capt. Wilson Chase, Twenty-first Infantry.]

Food sufficient and in accordance with the regulations.

### REPORTS OF OFFICERS ON CHARTERED TRANSPORTS.

On August 11, 1899, Capt. Harlow L. Street, commissary of subsistence, United States Volunteers, transport commissary, reported to the Adjutant-General of the Army as follows in relation to the voyage of the *City of Para*, which carried troops under the command of Maj. J. A. Augur, Fourth Cavalry, from San Francisco to Manila:

Under date of July 29 the commanding officer, Maj. J. A. Augur, Fourth Cavalry, reported that the facilities for preparing the soldiers' food on board were inadequate, part of the apparatus being of obsolete pattern and unsatisfactory. He requested that an army range be put up. This paper was referred to the depot quartermaster at Honolulu, and, after inspection of the galley by him, a range was installed, the old steam cooker being left behind in his care, and the depot quartermaster at San Francisco informed of the fact.

It is further recommended that the present galley accommodation be enlarged by refitting part of the amidship cabin on main deck for a soldiers' galley, floored with brick, fitted with a ship's full-sized range and a complete apparatus for properly preparing food. An examination of the ship's plan shows this to be practicable. It is most necessary.

The troops have been well fed during the voyage; the men seemed to be contented and happy. Complaints of any kind have been rare.

[Extract from report of Maj. W. C. Brown, Forty-second United States Infantry Volunteers, United States transport *Dalny Vostok*, December 31, 1899.]

The food for the men has been satisfactory in every respect, and the amount of loss of meat and vegetables from spoiling has been so small as to be hardly worthy of mention.

As the regiment was last paid to include October 31, 1899, and consequently has two months' pay due, I authorized a credit of not to exceed $6 per man (but $2 credit being given at a time) in purchases from the subsistence department. The men availed themselves freely of this and exhausted the supply of the following articles: Apricots; butter; chocolate; corn, green; crackers, soda; crackers, ginger; ham, deviled; oysters; peaches; pears; pineapples; sardines; sirup, maple; soup, clam chowder; sugar, cut loaf; jam, blackberry; jelly, currant; lime juice; mustard, French; pickles, chowchow; pickles, gherkins; sauce, cranberry; cigars; pipes, brier No. 2; pipes, brier No. 4; tobacco, plug; tobacco, smoking, Duke's mixture; envelopes, letter, ordinarily good; ink, black; paper, note, ordinarily good; pencils, No. 2, American; penholders; matches, safety; towels, huck, No. 1; oranges; marmalade; candy, mixed; candy, lemon drops; candy, lime drops.

The messes for officers on these chartered transports were not conducted by the Subsistence Department. Prior to the issuance of the regulations for the Army Transport Service, which were approved by the Secretary of War on May 5, 1900, numerous complaints were made by officers on chartered transports that they were compelled to pay $1.50 per day for board, whereas officers on transports owned by the Government were charged only $1 per day.

## TROPICAL RATION.

On December 20, 1899, upon the recommendation of this office a board of officers, consisting of Lieut. Col. Charles A. Dempsey, First United States Infantry; Capt. Samuel W. Fountain, Eighth United States Cavalry, and Capt. Fred W. Foster, Fifth United States Cavalry, was appointed by the Secretary of War (Special Orders, No. 295, headquarters Army, December 20, 1899, paragraph 19), to meet at the War Department, Washington, D. C., at 10 a. m., December 22, 1899, or as soon thereafter as practicable, for the purpose of considering and reporting upon the matter of the composition of the ration for the use of troops in tropical climates. The board was authorized to call upon the Surgeon-General and the Commissary-General of Subsistence for such data and information as might be necessary.

On March 13, 1900, the board completed its labors in part and submitted a report on the composition of the ration for use in tropical climates. The proceedings and recommendations of the board in this connection, and the action thus far had upon the same, are as follows:

### PROCEEDINGS OF A BOARD OF OFFICERS CONVENED AT WASHINGTON, D. C., PURSUANT TO THE FOLLOWING ORDER:

Special Orders, No. 295.

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
*Washington, December 20, 1899.*

[Extract.]

* * * * * * *

19. By direction of the Secretary of War a board of officers to consist of Lieut. Col. Charles A. Dempsey, First United States Infantry, Capt. Samuel W. Fountain, Eighth United States Cavalry, Capt. Fred W. Foster, Fifth United States Cavalry, is appointed to meet at the War Department, Washington, D. C., at 10 a. m., December 22, 1899, or as soon thereafter as practicable, for the purpose of considering and reporting upon the matter of the composition of the ration for the use of troops in tropical climates. The junior member of the board will act as recorder.

The board is authorized to call upon the Surgeon-General and the Commissary-General of Subsistence for such data and information as may be necessary.

Upon the final adjournment of the board the members thereof will return to their respective places of receipt by them of this order.

The travel enjoined is necessary for the public service.

* * * * * * *

By command of Major-General Miles:

H. C. CORBIN, *Adjutant-General.*

WASHINGTON, D. C., *March 13, 1900.*

The board met pursuant to the foregoing order at 10 o'clock a. m., December 28, 1899. Present, all the members.

A large amount of written and printed matter was submitted for the information and consideration of the board.

Among the most interesting and valuable of these papers were the proceedings of the three boards of officers convened, respectively, in Cuba, Porto Rico, and the Philippines, with the same object in view.

These proceedings were accompanied by a large number of letters, etc., from officers serving in those departments, treating of the ration and making suggestions in regard to modifications considered desirable in adapting it to the necessities of troops serving in a tropical climate.

After a thorough discussion of the subject it was determined that all reports and correspondence submitted to the board should be carefully read by each of the members, so that each should understand exactly what data was available before proceeding further.

The board then called on the Commissary-General and Surgeon-General, as directed in the order.

The Commissary-General promised any assistance in his power, and directed that all possible aid be afforded the board in its investigations by the members of his department. He also requested the board to consult with him frequently, and unhesitatingly ask for any further information or assistance it might require.

The question as to the desirability of making an issue of desiccated in lieu of fresh vegetables, when the latter could not be obtained, having come up, the Commissary-General stated that there was a large supply of these desiccated vegetables on hand at Santiago, and that he would direct an immediate issue for the purpose of determining this point, and would submit the report on the subject to the board as soon as it was received. He also directed that samples of the salted meats now supplied by the Subsistence Department be procured and submitted for the information of the board.

The Surgeon-General was equally obliging in his offers of assistance to the board, as was also Col. Charles Smart, medical department.

Colonel Smart has made an exhaustive study of the subject of food. He supplied the board with a large amount of literature on the subject by the leading authorities in the country, and in every way exerted himself to assist the board in its investigations.

The board, having carefully read the documents referred to it, proceeded to a full discussion and consideration of the changes in the ration proposed in the proceedings of the three boards, both with reference to the ration itself and the method of handling it.

The suggested changes are as follows:

The Philippine board recommends: The elimination of pork, the reduction of 4 ounces of fresh beef, 2 ounces of flour, and one-half the vinegar in each ration. To take the place of the articles reduced it recommends the addition of 2 ounces of rice and 2 ounces of dried fruit in lieu of the 4 ounces of beef reduced, the addition of 2 ounces of oatmeal in lieu of the 2 ounces of flour, the direct addition of 5 pounds of sugar to 100 rations, and the substitution of an equal measure of cucumber pickles in lieu of the vinegar reduced. It also leaves the drawing of salmon for one day in ten in lieu of fresh beef to the discretion of the company commander, and suggests that two days' bacon and eight days' beef be issued in each ten days' rations.

Since the proceedings of this board were submitted, 2 ounces of dried fruit have been added to the ration, consequently the desirability of reducing the beef ration in order to provide this article is no longer in question. The recommendation that the fresh meat ration be reduced in quantity was so opposed to all the teachings of experience, both in our own country and in Cuba and Porto Rico, that the board was unable to accept this recommendation as conclusive without further investigation. Two members of the board have served in Cuba and the third in Porto Rico, and their personal experience has been that as much fresh meat was desired and eaten as in the United States, and with no deleterious effect on the health of the men. The natives of these countries are also large meat eaters, when they are able to procure it, and the meat eaters are noticeably stronger and healthier looking than the poorer classes, who from necessity are mainly vegetarians. The board also interviewed a number of officers and other people who had been in the Philippines, and, taking all sources of information together, the board is of the opinion that it would be a mistake to make any fixed reduction in the meat ration.

If such a reduction is regarded desirable at any particular place or station by the immediate commanders it can be readily done by substituting for the portion undrawn some other article, or by regarding it as a saving, as provided later in these proceedings.

The other suggestions seem to possess considerable value, and have been considered, in making up the ration table, as finally submitted.

The Porto Rican board recommends: "That fresh beef be issued seven days in ten; that canned salmon be abolished as part of the ration; that oatmeal (20 ounces) be added to the ration in lieu of corn meal; that native beans be substituted for the white beans; that the fresh-vegetable component be increased one half."

If more than the authorized issue of fresh vegetables is required, the additional amount should be provided by the savings from the other components of the ration. In regard to the substitution of the native for the white bean, it would seem that there is no regulation preventing the Subsistence Department from supplying the former if desired. Both are beans in the meaning of the regulations, and both apparently possess about the same nutritive value. It is not considered desirable to hamper the operations of the Subsistence Department by prescribing any one variety of bean any more than one brand of flour.

The other suggestions are considered in the ration table.

The Cuban board recommends no change in the present ration except "that certain fixed savings be made from the different components and that the money value of these savings constitute a credit fund against which company commanders can draw in any article of food kept on hand for issue or sale by the Subsistence Department."

It thus appears that this board considers the present ration satisfactory, provided part of its components can be readily exchanged for others of equal money value.

The method of attaining this end proposed by Maj. A. L. Smith, Commissary of Subsistence, and endorsed by the board is ingenious, and might work in practice. It is objectionable in that it takes out of the control of the people who are actually using the ration the determination of the articles and quantities that shall be consumed and those that shall be saved. In some organizations certain articles may constitute the bulk of the savings, while in others entirely different articles may be saved, and it is certainly better to leave this question to the company commander, who is aquainted with the tastes and preferences of his men, than to make an invariable rule for all organizations. The present system of allowing the money received from the sale of savings to be paid into the company fund and to be expended therefrom from time to time for the improvement of the table fare of the organization has always given satisfaction and has stood the test of many years' experience. And such a radical departure from this system as that proposed can not be recommended.

The company fund is one feature of mess administration that has never been criticised, and it would be far better to increase its importance and usefulness by facilitating the transfer of the money value of any part of the ration to it, rather than take any step calculated to do away with it.

After a full discussion of the proposed changes in the ration, as indicated in the proceedings of these three boards and the accompanying documents, the board determined to make a fuller and more thorough investigation into the question by consulting all available sources of information. With this end in view, the board interviewed a number of persons, both soldiers and civilians, who were supposed to be more or less familiar with the subject, including a number of officers and enlisted men who had served in different tropical stations, and also consulted everything written or printed on the subject to which it had access. The board also examined the quality of the components of the ration now issued, particularly as to the salted meats. These latter are far superior to anything heretofore issued, and are so prepared as to insure the greatest possible keeping qualities in any climate. No exception can be taken to the quality of any part of the ration.

So long as the present high standard is maintained, no well-grounded complaint can be made on this score, and it should not be forgotten that many of the complaints made were directed not so much against the ration itself as against the quality of its components in particular instances.

On February 21 the Commissary-General referred to the board the reports of the various officers in the Department of Santiago, to whom a trial issue of desiccated potatoes had been made with a view of determining whether they would form a fit substitute for the fresh article when the latter could not be obtained.

Of ten reports made on the subject not one was favorable. The desiccated potatoes were universally condemned as unpalatable and wholly unsuited as a substitute for fresh vegetables.

On the same date Dr. Louis L. Seaman, of New York, who served as surgeon First Regiment United States Volunteer Engineers in Porto Rico, and as acting assistant surgeon in the Philippines, explained to the board his views as to the defects of the present ration and the modifications that he regarded as necessary to adapt it to the needs of troops serving in tropical climates. Dr. Seaman, who has undoubtedly devoted considerable thought to the subject, spoke very entertainingly of his experience and the conclusions he had drawn therefrom. He has very decided ideas as to the diet suitable for the tropics, and expressed himself as much pleased when shown that the ration recommended by the board was perfectly adapted to the formation of such a dietary as he considered desirable.

Any ration adopted must comprise a meat, a bread, a vegetable, a seasoning, and a coffee, sugar, and fruit component, and when a careful comparison is made between the articles now composing these components and all those suitable for the purpose it will readily be seen that no important addition can be made to the list, and that, in fact, the articles composing the ration must be about the same in all climates.

The problem is really to find such a ration as will, by substitutions among its various ingredients, be suitable for all climates.

Such a ration should possess the following qualifications:

It should be nutritious, sufficient in quantity, easy of transportation, and should consist of as few different articles as possible. It should be proof against climatic changes and susceptible at all times to the greatest flexibility and elasticity, suitable to either the tropics or the polar circle, and capable of affording such changes in diet as will be best calculated to preserve the health of the soldier under the conditions surrounding him.

In cold countries nitrogenous food and that calculated to produce bodily heat are necessary, but in warm climates such foods may not be needed, and the ration should accommodate itself to the needs of the soldier everywhere.

In the North it should supply him with an abundance of the heat-producing elements needed, while in the tropics it should supply him with a diet suited to his environment, and when he is called on for any extra exertion it should readily adapt itself to the increased demands of the system.

The following ration is submitted as one which, taken in connection with the suggested changes in the regulations referred to later, will perfectly reconcile these conflicting considerations, while at the same time entailing little or no extra expense on the Subsistence Department.

The kinds and quantities of articles composing the ration for troops, and the quantities computed for 100 rations, are as follows:

| Articles. | Quantities per ration. | | Quantities per 100 rations. | | |
|---|---|---|---|---|---|
| | *Ounces.* | *Gills.* | *Pounds.* | *Ounces.* | *Galls.* |
| Meat components: | | | | | |
| Fresh beef | 20 | | 125 | | |
| or fresh mutton, when the cost does not exceed that of beef | 20 | | 125 | | |
| or bacon | 12 | | 75 | | |
| or dried fish | 14 | | 87 | 8 | |
| or pickled, fresh, or canned fish | 18 | | 112 | 8 | |
| (Fresh fish dressed, head and tail on.) | | | | | |
| Bread component: | | | | | |
| Hard bread | 16 | | 100 | | |
| Flour | 18 | | 112 | 8 | |
| Baking powder for troops in the field, or when ovens are not available | $\frac{16}{25}$ | | 4 | | |
| or hops when ovens are available | $\frac{1}{50}$ | | | 2 | |
| or dried or compressed yeast when ovens are available | $\frac{1}{25}$ | | | 4 | |
| Vegetable components: | | | | | |
| Beans | $2\frac{2}{5}$ | | 15 | | |
| or rice | $1\frac{3}{5}$ | | 10 | | |
| or hominy | $1\frac{3}{5}$ | | 10 | | |
| or oatmeal | $1\frac{3}{5}$ | | 10 | | |
| Potatoes | 16 | | 100 | | |
| or potatoes, 12¾ ounces, and onions, 3¼ ounces | 16 | | 100 | | |
| or potatoes, 11¼ ounces, and canned tomatoes, 4¾ ounces | 16 | | 100 | | |
| or potatoes, 11¼ ounces, and other vegetables, not canned, 4¾ ounces, when they can be obtained in the vicinity or transported in a wholesome condition from a distance | 16 | | 100 | | |
| Coffee, sugar, and fruit component: | | | | | |
| Coffee, green | $1\frac{3}{5}$ | | 10 | | |
| or coffee, roasted | $1\frac{7}{25}$ | | 8 | | |
| or coffee, roasted and ground | $1\frac{7}{25}$ | | 8 | | |
| or tea, green or black | $\frac{8}{25}$ | | 2 | | |
| Sugar | $3\frac{1}{5}$ | | 20 | | |
| or molasses | | $\frac{64}{75}$ | | | 2⅔ |
| or cane sirup | | $\frac{64}{75}$ | | | 2⅔ |
| Dried fruit | $1\frac{3}{5}$ | | 10 | | |
| Seasoning components: | | | | | |
| Vinegar | | $\frac{4}{25}$ | | | ½ |
| Cucumber pickles | | $\frac{4}{25}$ | | | ½ |
| Salt | $\frac{16}{25}$ | | 4 | | |
| Pepper, cayenne or black | $\frac{1}{25}$ | | | 4 | |
| Soap and candle components: | | | | | |
| Soap | $\frac{16}{25}$ | | 4 | | |
| Candles (when illuminating oil is not furnished by the Quartermaster's Department) | $\frac{6}{25}$ | | 1 | 8 | |

MEAT COMPONENT.

In the opinion of the board the meat ration should not be reduced except in particular instances, the necessity in each case being determined by the immediate commander on the ground.

The meat ration has been simplified by dropping from it the alternative components pickled beef and pork. With the present improved methods of curing and packing the bacon supplied by the Subsistence Department there is no difficulty in delivering it in perfect condition wherever the needs of the service require; and as the only logical reason for the issue of barreled and pickled meats was their supposed superior keeping qualities, it is thought the time has now come to drop these undesirable articles from the list of meats issued as part of the regular ration.

Neither is wanted by the people who use the ration, and their issue always causes dissatisfaction. The other meat components have been left as at present prescribed, except that the amounts of pickled, canned, or fresh fish have been made uniform.

Whenever fresh meat is available, at least six days' fresh beef or mutton should be issued in each ten days' rations, and three days' bacon; the remaining one day's ration may be fish when circumstances are favorable and when fish is desired by the commander of the organization.

### BREAD COMPONENT.

The bread ration has been simplified by eliminating corn meal and providing that it shall consist of 1 pound of hard bread or 18 ounces of flour with the necessary leavening component. The present regulation provides for the issue of baking powder when troops are in the field, but when in garrison requires that it or its equivalent shall be purchased from the savings of the flour ration.

It is not seen why this distinction should be made, and it is therefore recommended that either baking powder, yeast, or hops shall always be issued in connection with the flour ration.

### VEGETABLE COMPONENT.

The only change made in this component is the striking out of dried pease and the substitution therefor of oatmeal, to be issued at the same rate as rice.

Pease have not proved a satisfactory component of the ration. They are only used in soup, and for this purpose beans are fully as nutritious and far more palatable, while the beans can be cooked in other ways. No company commander will draw the pease if it can be avoided, as he has found by experience that they are not liked by his men, and that a very limited amount of them can be utilized at best. Oatmeal is a favorite article of food with the soldier, both in temperate and tropical climates, and large quantities are purchased and paid for out of the company funds and used throughout the service, while in the Philippines it has been made a part of the regular ration, with very satisfactory results. The board therefore recommends that oatmeal form one of the components of the vegetable ration.

### COFFEE, TEA, SUGAR, AND DRIED FRUIT COMPONENT.

Ground coffee has been added as an alternative component. The necessity for such an issue will seldom occur, but there have been instances when an issue of this kind would have been very useful. This ground coffee should always be packed in air-tight cans.

The amount of sugar in the present ration was fixed before dried fruit was made one of its components, and is entirely inadequate to furnishing the necessary sweetening for both the fruit and the coffee or tea.

In the proposed ration an increased amount of sugar is supplied without increasing the total cost of the ration by reducing the fruit ration from 12½ pounds per 100 rations to 10 pounds, and increasing the sugar ration from 15 pounds per 100 rations to 20 pounds. The 10 pounds of dried fruit and 5 pounds extra of sugar, taken together, constitute a more desirable issue than 12½ pounds of fruit alone.

### SEASONING COMPONENTS.

In lieu of the present vinegar component of 1 gallon to 100 rations, the proposed ration gives one-half gallon of vinegar and one-half gallon of cucumber pickles.

The present vinegar ration is ample for all purposes, including the manufacture of pickles, if fresh cucumbers are available, but in the majority of instances these latter can not be obtained. The suggested ration will give all the vinegar needed in serving the rest of the ration, and at the same time supply a much needed antiscorbutic in the shape of pickles.

The issue of either black or cayenne pepper is recommended instead of black only, as at present.

Some samples of a combined meat and vegetable ration, prepared by the Franco-American Food Company, and preserved in air-tight cans, were presented to the board.

The materials of this ration were placed in the can raw, and then cooked, thus preserving all the extractive and nutritive qualities of the ingredients. This ration is prepared for use by placing the can in boiling water about 15 minutes before opening. On trial the ration was found to be exceedingly palatable. It formed a delicious rich stew, and should it be found by experience that it possesses the necessary keeping qualities, and can be supplied to the soldiers in the same condition and of the same quality as the samples submitted to the board, it would form a most valuable addition to the ration on active service—when fresh beef and fresh vegetables could not be supplied.

The board recommends that a limited quantity of these rations be procured and tested, both as to keeping qualities and acceptability for field service. From the result of this test it can then be determined whether it is advisable to supply this ration for field service; and if so, to what extent, and under what circumstances.

In connection with this proposed ration table, the board recommends that paragraphs 1258 and 1269 Army Regulations be amended to read as follows:

"1258. Issues of rations to troops will be made on ration returns signed by the immediate commanders of the organizations, and the issues ordered by the commanding officer of the post or station. Ration returns will be made ordinarily for a few days at a time, for the individuals of the organization actually present, and for only such quantities as the organization can receive and properly care for, and will be presented at the place where rations are due. *Should the commander of any organization desire to substitute for any component of the ration any other article of food for sale or issue by the Subsistence Department, he will so state on the ration return, and, when public loss will not ensue, the money value of the rations retained will be issued in the articles asked for, except, that where contracts exist for supplying fresh beef, at least sixth-sevenths of the authorized beef ration will be drawn in kind.* Rations will not be issued for a past period, if troops have been sufficiently subsisted; nor will back rations be purchased as savings."

"1269. Articles of the ration due a bakery, a company, or any organization, not needed for consumption, will be retained by the commissary if required for reissue, and will be purchased as savings at the invoice price, but where contracts exist for supplying fresh beef, savings and sales of fresh beef (except of that issued to the sick in hospital, the detachment of the hospital corps, and the hospital matron serving therein) will not exceed one-seventh of the authorized beef issue. The commissary will purchase the savings of hospitals at cost prices, when the surgeon in charge so desires, but will not purchase savings of companies, bakeries, or any organization when public loss would result. When not required for reissue, savings may be sold to any person."

These amended regulations will give the greatest possible flexibility and elasticity to the ration. They will permit company commanders to exchange directly any part of the ration for its equivalent money value in any other article supplied by the commissary, or at their discretion to receive the money value of the undrawn portion in cash, this to be taken up in the company fund and used for the purchase of vegetables and such other articles of food as may be desired.

In order to avoid loss either to the United States or to the contractor, this power has been limited as regards fresh beef, whenever contracts exist for the supply of this article. Moreover, under ordinary circumstances no greater saving than that authorized would be made.

The immediate commander can thus vary the diet of the soldier to almost any extent, the only limitation being that the meat drawn must be at least 60 per cent of the full ration.

There is a marked difference between the ration and the diet of the soldier.

The ration is the allowance for the subsistence of one person for one day, and consists of the meat, the bread, the vegetable, the fruit, the coffee and sugar, the seasoning, and the soap and candle components, most of the components consisting of several alternative articles.

The diet is what is actually prepared in the company kitchen for consumption by the soldier.

The company fund is of the greatest assistance in enabling a satisfactory diet to be prepared from the ration. It is difficult for the Subsistence Department to supply all the varied articles desired for this purpose, but with a cash fund to draw on each company commander can usually make local purchases of fresh vegetables, etc., sometimes one kind and sometimes another, when probably at no time could a sufficient amount of any one article be procured to supply the whole command.

Thus a larger and more varied bill of fare can be furnished the soldier than would be possible from any fixed ration alone, while at the same time no additional expense is imposed on the Subsistence Department.

Every effort should be made to promote the accumulation of such a fund by facilitating the exchange of any part of the ration for its money value when not desired or not available for consumption.

The soldier is not required to eat any article because it is a part of the ration; he may transform it into some other article of food which he likes better or which is better for him under local climatic conditions. Thus any component of the ration may be reduced in quantity, and the money value of the part not issued may be drawn in other articles or in cash, as the company commander may elect, and the soldier can have any variation of his diet within certain money value limits which his officers consider necessary.

The ration is fixed and is sufficient for subsistence under any conditions, but the dietary depends on the judgment of the company officers and the ability of the company cooks.

If a change of diet is advisable, it lies with the company commander to carry it into effect. If the change is desirable on medical grounds, medical officers should communicate their views to these responsible officers, and the change can be effected without difficulty.

The ration need not be changed to effect a change in the diet.

In order to adapt the ration to the necessities of troops traveling otherwise than by marching it is recommended that paragraph 1256, Army Regulations, be amended to read as follows:

"When troops travel otherwise than by marching, or when for short periods they are separated from cooking facilities and do not carry cooked rations, the following articles shall be issued in lieu of the corresponding components of the regular ration: Twelve ounces canned cooked meat or canned dried beef, in lieu of fresh or salt meat; 5 ounces canned baked beans, in lieu of dried beans; 4 ounces canned fruit, in lieu of dried fruit, and 21 cents in lieu of coffee and sugar. All other components of the regular ration will be issued in kind or purchased as savings, as prescribed in paragraph 1269, Army Regulations (as amended). When troops arrive at their destination the canned food and coffee money which were issued for time in excess of that actually consumed in the journey will be immediately turned in to the commissary and the corresponding components of the regular ration issued in their stead."

If it is not desired to draw the other components in kind their commutation will admit of buying any condiment desired, and at least one additional article daily.

That article can be varied within limits by the company commander to suit the taste and convenience of the soldiers. It is also recommended that whenever practicable the meat component of this ration be varied from day to day.

The present component, canned corned beef, although palatable for a few meals, becomes distasteful if used two days in succession. If canned dried and chipped beef were issued on alternate days, it would add very much to the acceptability of this ration.

The board has spared no effort to make itself thoroughly familiar with the subject submitted for its consideration. It has been in session daily since its organization, has carefully considered every suggestion made in reference to changes or improvements in the ration, has made extensive inquiries as to the acceptability and healthfulness of the present ration, and has examined and tested numerous articles prepared in various ways, which have been recommended by different people, manufacturers and others, as suitable components of the ration.

The present ration is the product of a century's experience. It is based on the recommendations of several generations of army officers, who, by practical experience, both in the field and in garrison, and by service in all parts of the United States, from Alaska and Dakota in the North to Arizona, Texas, and Florida in the South, have learned the food best adapted to the needs of the soldier under all circumstances of service. It is composed of the articles which are ordinarily included in the diet of the class from which the American soldier is mainly drawn, and to the use of which his system has always been accustomed. It is in all essential features satisfactory.

Change is not necessarily improvement, and the board has been chary of recommending any radical change in the components of the ration. Of course improved methods of preparing and preserving food may at any time make available as a component of the ration some article which previously has been unattainable, and for this reason the board reccommends for trial the combined meat and vegetable ration previously referred to. If this article stands the test suggested it will prove an exceedingly valuable addition to the field ration under certain circumstances, but the board only recommends unqualifiedly as part of the regular ration those articles whose value has been proved.

C. A. Dempsey,
*Lieut. Col., First Infantry, President.*
S. W. Fountain,
*Captain, Eighth Cavalry, Member.*
F. W. Foster,
*Captain, Fifth Cavalry, Recorder.*

The foregoing proceedings were referred, by direction of the Secretary of War, to the Acting Commissary-General of Subsistence, on March 17, 1900, and were returned with the following indorsement:

[Second indorsement.]

WAR DEPARTMENT,
OFFICE COMMISSARY-GENERAL OF SUBSISTENCE,
*Washington, May 15, 1900.*

Respectfully returned to the Adjutant-General of the Army with the following remarks:

By paragraph 1251 of the Army Regulations the ration is defined as being the allowance for subsistence for one person for one day, and while it has been decided that the ration is not an emolument, there must be some fixed and established components the issue of which in due proportions constitutes the supply and allowance to which an enlisted man is by the terms of his contract with the Government entitled. Therefore the ration should include all those components which are likely to be issued under varying circumstances of the service.

The board has recommended that a certain preparation of canned meat—in reality a beef stew—with vegetables, should be experimented with, and recommends that a limited quantity of these rations be procured in order to decide both as to keeping qualities and acceptability to field service. If the result of this test is satisfactory, the board states it can be determined whether it is advisable to supply this ration for field service, and if so, to what extent and under what conditions. I am strongly of the opinion that such an article as this should form part of the ration of our troops during active service in the field when fresh meat can not be procured, but when practicable to cook their food, and therefore, in order to make possible the issue of such an article, I think it should be included as one of the meat components of the ration, provided the tests are satisfactory.

I see no reason why the amount of canned fish (salmon) should be increased from 16 to 18 ounces, and therefore recommend that it be issued as at present authorized by the President—that is, 1 pound per ration.

It is also my opinion that soft bread should be prescribed as one of the components of the ration, as there are times when it is possible for the department to provide soft bread under contract; and as the advantage of being able to supply soft bread is particularly noticeable with volunteer troops, our Regulations should be framed so that they will apply to such, as when the volunteers first go into the field, coming as they do from all classes, it frequently happens that the organizations have no competent bakers.

A large portion of the people coming from the Southern States have been accustomed to the use of corn meal, and when they are enlisted either as regulars or volunteers, particularly as volunteers, they desire to be furnished with that particular article of food, therefore, in my opinion, corn meal should be continued as one of the components of the ration.

I agree thoroughly with the board in excluding pease as one of the vegetable components of the ration and substituting therefor oatmeal at the same ratio.

The coffee, sugar, and fruit component of the ration as established by the board meets with my approval.

I concur in the board's recommendation concerning the reduction of the vinegar component to one-half gallon per 100 rations and the substitution of one-half gallon cucumber pickles for the one-half gallon of vinegar omitted; but I consider that the issue of cayenne pepper as recommended by the board is entirely too large and recommend that cayenne pepper be issued at 2 ounces to the 100 rations.

The soap and candle components are not changed by the board, and I have no recommendation to make concerning them.

I submit herewith (Appendix A) a modification of the ration submitted by the board, embodying my suggestions as above, and if it is approved suggest that it may be published as paragraph 1253 of the Army Regulations.

The recommendation of the board for the modification of paragraph 1258 of the Army Regulations does not meet with my approval, inasmuch as the suggested addition permits of drawing of any article of food which is kept for sale or isued by this department, a condition which, if approved, would make it very difficult to account for the stores, and would almost preclude the possibilty of volunteers learning how to obtain their supplies. Furthermore, it allows savings to be made on fresh beef, and this does not seem necessary in view of the addition recommended to paragraph 1253, and which was published in General Orders, No. 78, Headquarters Army, 1899, and moreover the troops can now, under existing regulations, obtain all the benefits of substituting other articles of food by purchasing the same from their company funds.

I do not approve of the change recommended by the board in paragraph 1269, and recommend that the above paragraph be amended to read as follows—the changes now recommended by me have already been published in orders from the War Department:

"1269. Articles of the ration (excluding fresh vegetables, soft bread, dried fruits, fish, and baking powder, hops, dried or compressed yeast) due a bakery, a company, or an organization, not needed for consumption, will be retained by the commissary if required for reissue, and will be purchased as savings at the invoice prices. Savings and sales of fresh beef (except that issued for the sick in hospital, the detachment of the hospital corps, and the hospital matron serving therein) are prohibited; baking powder issued but not used will be returned to the commissary. The commissary will purchase the savings of hospitals, including fresh beef, at cost prices, when the surgeon in charge so desires, but will not purchase savings of companies, bakeries, or any organization when public loss would result. When not required for reissue, savings may be sold to any person."

The board also recommends an amendment to paragraph 1256, which prescribes the "travel ration." With this recommendation I totally disagree, for the reason that any number of men, less than a company, traveling unaccompanied by a commissioned officer, by the proposed amendment could not possibly carry out its provisions.

It is therefore recommended that paragraph 1256 be published to read as follows—the modifications being the substitution of canned meats instead of canned beef, the allowance of the issue of canned tomatoes at the rate of 1 pound per man per day irrespective of the number of days required in the travel, and the issue of roasted and ground coffee. The regulation as it now stands prohibits the issue of canned tomatoes, unless the men are traveling for more than four days. I see no reason why this exception should be made.

"1256. When troops travel otherwise than by marching, or when for short periods they are separated from cooking facilities and do not carry cooked rations, the following articles will be issued in lieu of all components of the ordinary ration. They constitute the travel ration:

| Articles. | | Per 100 rations. |
|---|---|---|
| Soft bread | pounds | 112½ |
| or hard bread | do | 100 |
| Canned meat | do | 75 |
| Baked beans, 1-pound cans | number | 33 |
| or baked beans, 3-pound cans | do | 15 |
| Canned tomatoes | pounds | 100 |
| Coffee, roasted, or roasted and ground | do | 8 |
| Sugar | do | 20 |

"When troops arrive at their destination or rejoin their station subsistence upon the ordinary ration will be resumed immediately, and the travel rations remaining on hand in good condition, which were issued in excess of the time actually consumed by the journey, will be exchanged by the commissary for the regular ration issued at the station."

J. F. Weston,
*Acting Commissary-General of Subsistence.*

## APPENDIX A.

1253. The kinds and quantities of articles composing the ration for troops when cooking is practicable, and the quantities computed for 100 rations, are as follows:

| Articles. | Quantities, per ration. | | Quantities, per 100 rations. | | |
|---|---|---|---|---|---|
| | *Ounces.* | *Gills.* | *Pounds.* | *Ounces.* | *Gallons.* |
| Meat components: | | | | | |
| Fresh beef | 20 | | 125 | | |
| or fresh mutton, when the cost does not exceed that of beef | 20 | | 125 | | |
| or bacon | 12 | | 75 | | |
| or dried fish | 14 | | 87 | 8 | |
| or pickled fish | 18 | | 112 | 8 | |
| or fresh fish (dressed, head and tail on) | 18 | | 112 | 8 | |
| or canned fish | 16 | | 100 | | |
| Bread components: | | | | | |
| Flour | 18 | | 112 | 8 | |
| or soft bread | 18 | | 112 | 8 | |
| or hard bread, to be ordered issued only when impracticable to use flour or soft bread | 16 | | 100 | | |
| or corn meal | 20 | | 125 | | |

| Articles. | Quantities, per ration. | | Quantities, per 100 rations. | | |
|---|---|---|---|---|---|
| | *Ounces.* | *Gills.* | *Pounds.* | *Ounces.* | *Gallons.* |
| Bread components—Continued. | | | | | |
| For troops in the field— | | | | | |
| Baking powder, when ovens are not available | 16/25 | .......... | 4 | .......... | .......... |
| or hops, when ovens are available | 1/50 | .......... | .......... | 2 | .......... |
| or dried or compressed yeast, when ovens are available | 1/25 | .......... | .......... | 4 | .......... |
| (Baking powder, hops, dried or compressed yeast will not be issued to troops in garrison, but only when in the field.) | | | | | |
| Vegetable components: | | | | | |
| Beans | 2 2/5 | .......... | 15 | .......... | .......... |
| or rice | 1 3/5 | .......... | 10 | .......... | .......... |
| or hominy | 1 3/5 | .......... | 10 | .......... | .......... |
| or oatmeal | 1 3/5 | .......... | 10 | .......... | .......... |
| Potatoes | 16 | .......... | 100 | .......... | .......... |
| or potatoes 12⅘ ounces and onions 3⅕ ounces | 16 | .......... | 100 | .......... | .......... |
| or potatoes 11⅕ ounces and canned tomatoes 4⅘ ounces | 16 | .......... | 100 | .......... | .......... |
| or potatoes 11⅕ ounces and other vegetables not canned 4⅘ ounces, when they can be obtained in the vicinity or transported in a wholesome condition from a distance | 16 | .......... | 100 | .......... | .......... |
| Coffee, sugar, and fruit components: | | | | | |
| Coffee, green | 1 3/5 | .......... | 10 | .......... | .......... |
| or roasted coffee | 1 7/25 | .......... | 8 | .......... | .......... |
| or roasted and ground coffee | 1 7/25 | .......... | 8 | .......... | .......... |
| or tea, black or green | 8/25 | .......... | 2 | .......... | .......... |
| Sugar | 3⅕ | .......... | 20 | .......... | .......... |
| or molasses | .......... | 18/25 | .......... | .......... | 2¼ |
| or cane sirup | .......... | 18/25 | .......... | .......... | 2¼ |
| Dried fruit | 1⅗ | .......... | 10 | .......... | .......... |
| Seasoning components: | | | | | |
| Vinegar | .......... | 4/25 | .......... | .......... | ½ |
| Cucumber pickles | .......... | 4/25 | .......... | .......... | ½ |
| Salt | 16/25 | .......... | 4 | .......... | .......... |
| Pepper, black | 1/25 | .......... | .......... | 4 | .......... |
| or pepper, cayenne | 1/50 | .......... | .......... | 2 | .......... |
| Soap and candle components: | | | | | |
| Soap | 16/25 | .......... | 4 | .......... | .......... |
| Candles (when illuminating oil is not furnished by the Quartermaster's Department) | 6/25 | .......... | 1 | 8 | .......... |

Ordinarily fresh beef will be issued seven days in ten; salt meats, three days in ten. These proportions of the meat ration may, however, be varied by commanding officers, according to the necessities of the service on which the troops may be engaged.

The Commissary-General of Subsistence is authorized to reduce, on the recommendation of chief commissaries of the various departments, the amount of beef issued, and in lieu thereof to issue the equal money value of the beef thus reduced in ham or other articles of sales.

For troops serving in the Department of Alaska, the allowance of bacon is 1 pound per ration, and of fresh vegetables 1¼ pounds per ration.

In adjusting charges to be made against enlisted men or others on account of increased expense to the Government for their subsistence, the value of the ordinary ration will be estimated at 18 cents, that of the travel ration at 40 cents.

[Third indorsement.]

ADJUTANT-GENERAL'S OFFICE,
*Washington, May 31, 1900.*

Respectfully referred to the Surgeon-General of the Army for remark and recommendation.

JOHN A. JOHNSTON,
*Assistant Adjutant-General.*

[Fourth indorsement.]

WAR DEPARTMENT,
SURGEON-GENERAL'S OFFICE,
*June 4, 1900.*

Respectfully returned to the Adjutant-General of the Army. In my opinion, the principle on which our present army ration is based is correct: The Subsistence Department to provide certain staple articles of food, in quantity sufficient for the needs of the troops under the most severe tests of hard work and climatic exposures, the said articles having a money value which will enable company commanders and others responsible for the messing of the men to vary the diet when needful by purchases from the Subsistence Department or sometimes from outside sources. The articles selected for issue and the quantities allowed have been the result of many years of experience, both in time of peace and in time of war. The board therefore makes no suggestion looking to a radical departure from present methods. I agree with the Acting Commissary-General of Subsistence in his remarks on soft bread, corn meal, and cayenne pepper, and in those of the board in respect to pease, oatmeal, coffee, sugar, fruit, and vinegar.

The amendments of Army Regulations proposed by the board and disapproved of by the Acting Commissary-General of Subsistence have a reference to ways and means rather than to food and its variety, from the medical point of view, except in the case of Army Regulations 1256, in which I concur in the substitution of canned meats instead of canned beef, and the allowance of 1 pound of canned tomatoes per ration.

I commend the remarks of board on the distinction to be made between the fixed ration and the varied dietary which may be provided from it.

GEO. M. STERNBERG,
*Surgeon-General, United States Army.*

Final action by superior authority has not yet been taken upon these proceedings and recommendations.

## THE EMERGENCY RATION.

On the 17th of April, 1895, the Commissary-General of Subsistence addressed a communication to the Adjutant-General of the Army on the subject of an emergency ration, in which he said:

> While no army in the world is so well supplied with food as is ours, there is believed to be still wanting in our service a special and distinctive ration (for use in substitution of the ordinary ration), to be carried on the person of the soldier on emergent occasions where transportation is limited or is not available. Such a ration should combine the qualities of wholesomeness, palatability, proper nutritive value, and portability, and should, in addition, possess good keeping qualities.

This communication was submitted to the Secretary of War by the Lieutenant-General, by indorsement of April 24, 1895, "recommending favorable action. The subject is one of importance." The Secretary of War approved the recommendation May 6, 1895, and an official copy of the letter and indorsements was referred by the Adjutant-General to the commanding generals of the eight military departments on May 11, 1895, with instructions to convene boards in their respective departments, to consist in each of one officer of the Subsistence Department, one of the Medical Department, and three of the line, to consider and recommend a proper ration for troops operating in emergencies, and directing them to instruct such boards to give consideration to the points mentioned in the Commissary-General's letter. The reports of the boards were required to be forwarded to the Adjutant-General, with such remarks or suggestions by department commanders as they might desire to make.

Upon the final report of action by the boards an order was issued by the Secretary of War (Special Orders, No. 74, Headquarters Army, March 28, 1896, paragraph 3) constituting a board of officers, to consist of Maj. Charles Smart, surgeon; Maj. Charles A. Woodruff, commissary of subsistence; Maj. Ernest A. Garlington, inspector-general; Capt. Louis A. Craig, Sixth Cavalry, and First Lieut. William C. Brown, First Cavalry, to meet in Washington, D. C., March 31, 1896, or as soon thereafter as practicable, to examine the reports of the boards which were convened in the several military departments, "to consider and recommend a proper ration for troops operating in emergencies," and such views and suggestions as the Major-General Commanding the Army and the Commissary-General of Subsistence might lay before it. The board was directed to make recommendations upon the subject and report upon the minimum amount of articles of food necessary to sustain a soldier in health and activity while in active service in the field for a limited period.

Upon the report of this board the following order was issued:

GENERAL ORDERS, No. 49.

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
*Washington, December 5, 1896.*

1. The following order has been received from the War Department:

"WAR DEPARTMENT, *Washington, December 5, 1896.*

"Under the authority vested in him by section 1146, Revised Statutes, the President hereby establishes an emergency ration for troops operating for short periods under circumstances which require them to depend upon supplies carried upon their persons. Its component parts are as follows: Bacon, 10 ounces; hard bread, 16 ounces; pea-meal, 4 ounces, or an equivalent in approved material for making soup; coffee, roasted and ground, 2 ounces, or tea, one-half ounce; saccharin, 4 grains; salt, 0.64 ounce; pepper, 0.04 ounce; tobacco, one-half ounce.

"DANIEL S. LAMONT,
"*Secretary of War.*"

2. The Secretary of War directs that this emergency ration be resorted to only on occasions arising in active operations when the use of the regularly established ration may be impracticable; that, although its nutritive qualities permit its use on half allowance, it will not be so used except in cases of overruling necessity, and never for a longer period than ten days; and that not more than five days' emergency rations be carried on the person at one time.

3. By direction of the Secretary of War the Subsistence Department will provide tough paraffin paper for wrapping the bacon; will furnish hard bread in grease-proof packages, the pea-meal in cylindrical packages, and the coffee, tea, saccharin, salt, pepper, and tobacco in suitable packages.

By command of Major-General Miles:

GEO. D. RUGGLES,
*Adjutant-General.*

A practical test of the use of the above-prescribed emergency ration by United States troops on active service was made at Fort Sill, Okla., in May, 1897, upon which Deputy Surgeon-General Charles Smart, who accompanied the command as medical officer, in rendering his report, suggested that certain requirements be omitted from paragraph 2, General Orders, No. 49, so that it would read as follows:

2. The Secretary of War directs that the emergency ration will never be used for a longer period than ten days, and that not more than five days' ration be carried on the person at one time.

In forwarding the report to the Adjutant-General of the Army the Surgeon-General of the Army said:

In my opinion this is an extremely valuable report, and reflects great credit upon Lieutenant-Colonel Smart, deputy surgeon-general, whose carefully conducted experimental test shows that the emergency ration for five days may be made to serve for ten days without any injury to the health of the troops using it. I concur in the recommendation made by Lieutenant-Colonel Smart at the close of his report.

On the 20th of January, 1899, this office made application to the Secretary of War for an order convening a board of officers—

To meet at the Army Building, New York City, N. Y., February 15, 1899, for the purpose of examining, testing, and reporting upon the various emergency rations as to their adaptability for use in the Army, and to compare the present authorized emergency ration with those submitted, the board to be authorized, on application, to make a practical test of the various rations with United States troops to be designated when the board is ready to make the practical trials.

Upon which an order was issued (Special Orders, No. 17, Headquarters Army, January 21, 1899, paragraph 31) appointing a board of officers, to consist of Col. Charles A. Woodruff, assistant commissary-general of subsistence, United States Army; Lieut. Col. Charles Smart, deputy surgeon-general, United States Army, and Maj. Louis A. Craig, assistant adjutant-general, United States Volunteers (captain, Sixth United States Cavalry), to meet February 15, 1899, at the Army Building, New York City, for the purpose of examining, testing, and reporting upon the various emergency rations as to their adaptability for use in the Army, and to compare the present authorized emergency ration with those that may be submitted to the board. The board was authorized, on application, to make a practical test of the various rations with United States troops to be designated when the board was ready to make the practical tests.

On the 5th of January, 1900, this office addressed the Adjutant-General of the Army upon the subject of the emergency ration, stating that—

> The present emergency ration is one in name only, in that it fails to meet the essential military requirements for an emergency ration.
>
> First. Such a ration should be small in volume and of a style of package easily transported in the pockets or haversacks of the men.
>
> Second. Articles composing this ration should be capable of being eaten without preparation necessitating the use of fire.
>
> Attention is invited to the fact that the emergency ration which this department is now supplying to the troops in the field is not the one described in the General Orders previously referred to, but is a preparation known as the "Standard Emergency Ration."
>
> Because of this it is suggested that this matter be brought to the attention of the board now in session here, with a view to establishing a ration so that this department may buy what is desired, rather than what is not. If the Standard Emergency Ration answers the purpose, let it be established; if not that, then something else.

In accordance therewith the board of officers convened by Special Orders, No. 295, Adjutant-General's Office, series 1899, to report upon a ration for use of troops serving in the tropics, was further ordered to investigate and report upon a suitable ration for use of troops under emergency. The report of the board on this subject has not yet been received.

### AUTHORITY FOR DISPOSITION OF SUBSISTENCE STORES.

On March 19, 1900, I invited the attention of the Secretary of War to the fact that—

> There is now no authority in an executive officer of the Government for disposing, by sale to the public, of such subsistence stores in good condition intended for issues or for sales to officers and enlisted men as have accumulated in excess of amounts required for use in the military service at subsistence depots, military posts, or in the field, and which can not, with economy and advantage, be shipped to other depots, posts, or places for military use.

I therefore submitted the recommendation that Congress be requested to enact a law which shall authorize the public sale of accumulations of subsistence stores in good condition, and to this end I submitted the following draft of a bill to accomplish the object desired:

> *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the Secretary of War may cause to be sold at public sale, under regulations to be prescribed by him, such subsistence stores in good condition intended for issue or for sales to officers and enlisted men as may from time to time accumulate at any subsistence depot, military post, or in the field, in excess of amounts required for use and which can not, with economy and advantage, be shipped to other subsistence depots, posts, or places for military use, the proceeds to be immediately available for general disbursement, under the appropriation for subsistence of the Army current at the time of sale, for any of the objects contemplated by that appropriation.

A copy of the above letter was sent to the chairman of the Committee on Military Affairs, House of Representatives, by the Secretary of War on April 6, 1900, recommending the favorable consideration thereof by Congress. On April 9, 1900, a bill (H. R. 10565, Fifty-sixth Congress, first session) was introduced and referred to the Committee on Military Affairs and ordered to be printed, as follows:

A BILL authorizing the disposing of subsistence stores.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the Secretary of War may cause to be sold at public sale, under regulations to be prescribed by him, such subsistence stores in good condition intended for issue or for sale to officers and enlisted men as from time to time accumulate at any subsistence depot, military post, or in the field in excess of amounts required for use and which can not, with economy and advantage, be shipped to other subsistence depots, posts, or places for military use, the proceeds to be immediately turned into the Treasury of the United States.

On April 14, 1900, this office addressed the chairman of the Military Committee, House of Representatives, with the view of having the bill amended before being reported to the House, by substituting these words of the original draft, viz, "the proceeds to be immediately available for general disbursement under the appropriation for subsistence of the Army current at the time of sale, for any of the objects contemplated by that appropriation," in place of the words, "the proceeds to be immediately turned into the Treasury of the United States," as reported in the bill.

This office also impressed upon the chairman the necessity, in view of the perishability of subsistence stores, for early legislation, it being now held that an act of Congress is necessary to authorize the sale of any property of the United States, and there being nothing on the statute books authorizing sales of accidental accumulations of the kind covered by bill No. 10565.

It is requested that the Secretary of War urge Congress to pass the bill in the amended form as recommended by this office.

### GARRISON AND FIELD BAKE OVENS, KITCHEN AND MESS-HALL FURNITURE, AND THE INDIVIDUAL MESS FURNITURE OF THE SOLDIER.

In the annual report of the Commissary-General of Subsistence for the year 1898 he stated that an item had been introduced in the annual estimate for the fiscal year 1900 tending toward the restoration to the Subsistence Department from the Quartermaster's Department of the building, altering, and repairing of bake ovens constructed in the bake-houses at the garrisoned posts and in the field, and furnishing the utensils for use with the same; also authorizing the purchase by the Subsistence Department of portable bake ovens for use of troops in the field and the utensils connected with the operation of the same. The matter was again referred to in the annual estimate for the subsistence of the Army for the fiscal year 1901, and is also included in the estimate for 1902, along with the duty of furnishing kitchen and mess-hall furniture and the individual mess furniture of the enlisted men in the field, now provided by the Quartermaster and Ordnance Departments. The Secretary of War has, under section 219, Revised Statutes, authority to make such distribution of duties between the Quartermaster and Subsistence Departments as he deems best for the interests of the service. The Subsistence Department is charged with the duty of providing the food supplies for the Army, and should be given the means to enable it to thoroughly perform such duty in order that responsibility for failure can be definitely fixed. At present the cooperation of three separate supply departments is required in getting food to the troops in the field.

The Dodge Commission, appointed by the President to investigate the conduct of the War Department in the war with Spain, reported (Vol. I, p. 148) as follows:

> Finally. In the opinion of this commission, there should be a division of the labor now devolving upon the Quartermaster's Department.

The following testimony was given before said commission by an officer of the Inspector-General's Department whose duties qualify him to speak intelligently on the subject:

> As nearly as I can recollect, there never has been any deficiency, since I have been in command of the division, in subsistence stores. There has been some complaint, however, as, for instance, that the bread was sour or the beef tainted, but these were only temporary defects, which were immediately corrected, and I think in most of the cases the meat and bread rejected were replaced. There is one point in considering complaints in regard to rations which I think I ought to bring to the notice of the commission. Three different departments are concerned in furnishing the soldier his ration; that is, before he is able to eat it, the cooperation of three departments. For example, the commissary buys the rations and turns them over to the quartermaster for transportation and distribution, and the Ordnance Department provides the knives, forks and spoons, canteens, tin cups, and haversacks which comprise the field mess kit. A majority of the complaints which came from the First South Carolina Volunteers about rations were charged to the Commissary Department, but there was no shortage of food, and the complaints resulted from the fact that the regiment did not receive its mess kits until just before it left Chickamauga Park. Previous to this they had to eat with their fingers, or from such dishes as they could improvise from old tomato cans, etc. So in investigating complaints about rations you must look and see which department is really responsible. This illustrates in the most pointed way the complex system of supply in our Army. Why one department should not provide the supplies and issue them, in view of all the necessities of the Army, I have not been able to see. It is an old question and possibly will never be answered, but I don't see why we should not have an answer which will satisfy any intelligent inquirer. We never have had it yet, but I do not see why there should not be one supply department acting in view of all the necessities of the service. But, as I say, it is an old question.
>
> By Colonel Sexton:
>
> Q. One of the volunteer officers says, "We get a coffee mill from one department and a coffee roaster from another."
>
> A. I think all the coffee mills and roasters are furnished by the Quartermaster's Department; but our system is most complex. You can see exactly how complex a question arises. Of course the quartermaster is in charge of the transportation, but the Quartermaster's Department has more articles of its own to transport than any other supply department of the Army. The commissary applies to the quartermaster for transportation. The quartermaster has his own supplies to transport, and it is a question, when the means of transportation are limited, whether he will bring up a lot of rations belonging to the Subsistence Department or clothing which belongs to him. If you were the quartermaster you would probably look after the transportation of your own supplies first. I call attention to this point because I think that unless we are able to understand it we may not always be fair in our criticisms.

It is hoped that Congress will so phrase the appropriation for subsistence of the Army as to place funds at the disposal of the Subsistence Department for the purposes above expressed, and as expressed in the annual estimate, and so that with funds available in that Department, the Secretary of War will be able to make the transfer of duties from the Quartermaster to the Subsistence Department under the authority which section 219, Revised Statutes, confers upon him.

### ARMY BAKERS.

The first step taken by my predecessors in recommending legislation for the enlistment of bakers for the military service was in the year 1877, when the Commissary-General recommended that "bakers should be specially enlisted, paid extra pay—say, $4 per month—and assigned to posts as are commissary sergeants," and that, in the event of the establishment of schools for cooks at recruiting depots, "bakers should also be instructed at the same schools." This recommendation was renewed in the annual reports for 1879, 1880, 1881, 1883, 1884, 1885, 1886, 1888, 1889, 1890, 1891, and 1892. In 1895 the Commissary-General, in citing the foregoing recommendations, again brought the matter to the attention of the Secretary of War for the purpose of having him urge upon Congress the desirability of passing the necessary laws for the enlistment and payment of bakers needed for the service, stating that at posts at which general messes are to be established or maintained there should be one baker at $30 per month and assistant baker at $18 per month, with additional assistant bakers at $18 per month, not exceeding one for every 200 rations of bread baked per day in excess of 300. He also recommended that a special allowance to the bakery for the necessary fuel and lights be established by regulations, and stated that the action recommended would produce the best results from the ration; no part of the flour issued to the soldier would be taken from him, and the detail of soldiers away from their legitimate duties would be to this extent prevented.

The above recommendation was renewed in the annual report of the Commissary-General of Subsistence for 1896. It is again urgently recommended that legislation be had upon this subject.

To properly subsist the troops when in the field means of furnishing them fresh bread should be provided. In order to do this, a field bakery column, modeled upon those now authorized in all foreign armies, should be organized, and trained bakers should be provided.

### TRAINING SCHOOL FOR ARMY COOKS.

As army cooks were authorized by act of Congress, approved July 7, 1898, for the Regular and Volunteer armies of the United States, particularly for managing, cooking, and serving the ration in the field, it is now urgently recommended that a training school for cooks be established at one of the large military posts in this country. Such school could supply the cooks and bakers required in the various organizations and for the proposed field-bakery column.

### ICE IN THE TROPICS.

On May 9, 1899, the Secretary of War authorized the daily issue during the fiscal year ending June 30, 1900, of 100 pounds of ice to each company, troop, or battery stationed in the island possessions, when it could be purchased, and a proportional part thereof, not less than 50 pounds for each detachment to which rations were issued, except civilian employees and sick in hospital. This authority was extended by the Secretary of War on June 23, 1900, to cover the fiscal year 1901, with the understanding that no savings be allowed to be made on same.

In the annual estimate for the subsistence of the Army for the fiscal year ending June 30, 1902, an item is inserted for the purchase of 100 pounds of ice (at 30 cents per 100 pounds) per day for each company, troop, or battery stationed in our insular possessions where ice can be furnished. This ice is required to cool drinking water, which must be boiled for sanitary reasons.

### TOILET PAPER.

On February 9, 1900, the Secretary of War approved the purchase by this Department of toilet paper at such military posts and camps at which troops are stationed as are provided with modern water-closets; and in accordance therewith the following was promulgated in General Orders, No. 22, Headquarters of the Army, February 24, 1900:

> Toilet paper, as an article of issue, will be furnished by the Subsistence Department until June 30, 1900, for the use of the enlisted men stationed at such military posts and camps as are provided with modern water-closets with sewer connections.
>
> Issues at such posts and camps will be made upon special requisitions of the commanding officers of organizations, approved by commanding officers of posts and camps, at the rate of one package of 1,000 sheets for each two enlisted men per month.

Based upon reports received from various officers, in favor of the continuance of the issue of toilet paper on the ground that a great economy had resulted on account of the prevention of stoppage in the closets, this office on June 30, 1900, recommended a continuance of the issue. The authority for the continuance was promulgated to the Army in General Orders, No. 91, Headquarters of the Army, July 9, 1900.

### EFFICIENCY OF THE SUBSISTENCE DEPARTMENT.

On February 6, 1900, I addressed the following communication to the Secretary of War with regard to the passage of an act to increase the efficiency of the Subsistence Department:

> I had occasion in my annual report of October 1, 1899, to suggest that prudence required that the paucity in the number of officers of the Subsistence Department for meeting the demands made on that Department should be brought under the inspection of Congress. Since that time the necessity of measures to relieve the stress has become imperative, and I therefore respectfully urge the honorable the Secretary of War to bring the matter to the attention of Congress, with the view of passing at as early a date as possible an act to increase the efficiency of the Subsistence Department. The legislation I propose is embodied in the following draft of a bill, viz:
>
> "*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That hereafter the Subsistence Department of the Army shall consist of one Commissary-General of Subsistence, with rank, pay, and emoluments of brigadier-general as now allowed by law; three assistant commissaries-general of subsistence, with the rank, pay, and emoluments of colonel of cavalry, instead of the two now allowed by law of said grade; six assistant commissaries-general of subsistence, with the rank, pay, and emoluments of lieutenant-colonel of cavalry, instead of the three now allowed by law of said grade; twelve commissaries of subsistence, with the rank, pay, and emoluments of major of cavalry, instead of the eight now allowed by law of said grade; forty commissaries of subsistence, with the rank, pay, and emoluments of captain of cavalry: *Provided*, That the additional officers above the grade of captain shall be filled by promotion, according to seniority, of the officers in the Subsistence Department of the Regular Army: *Provided further*, That five of the vacancies among the number of the captains and commissaries of subsistence created by this section shall be filled by selection from the post commissary-sergeants of the Army now in the service."
>
> In order that the wants of the Department may be clearly perceived, the following

table of the stations and duties of the regular and volunteer officers of the Department is given, which shows also the stations which are filled by details from other branches of the service.

| Stations. | Duties. | Number of Subsistence Officers at stations. | |
|---|---|---|---|
| | | Regular. | Volunteer. |
| Washington, D. C | Acting Commissary-General of Subsistence. | 1 colonel | |
| | Assistant | 1 lieutenant-colonel. | |
| | Assistant | 1 major | |
| New York, N. Y | Chief and purchasing commissary | 1 colonel | |
| | Assistant | 1 captain | |
| Chicago, Ill | Chief and purchasing commissary | 1 major | |
| San Francisco, Cal | Purchasing commissary | 1 major | |
| | Assistant | | 1 major (is also chief commissary). |
| | Assistant | | 1 major. |
| St. Louis, Mo | Purchasing commissary | 1 lieutenant-colonel. | |
| Boston, Mass | Purchasing commissary | 1 major | |
| Vancouver Barracks, Wash | Chief and purchasing commissary | 1 major | |
| Porto Rico | Chief and purchasing commissary | 1 lieutenant-colonel. | |
| Cuba | Chief commissary, Division of Cuba | | 1 major. |
| | Chief commissary, Matanzas | 1 captain | |
| | Chief commissary, Santiago | | 1 captain. |
| | Chief commissary, Department of Habana. | | 1 captain. |
| | Depot commissary, Habana | | 1 captain. |
| | Depot commissary, Nuevitas | | 1 captain. |
| Philippines | Chief commissary, Department of Pacific. | 1 major | |
| | Chief commissary, division | 1 major | 1 major. |
| | Various duties | 2 captains | 1 major, 8 captains. |
| Omaha, Nebr | Chief and purchasing commissary | 1 captain | |
| St. Paul, Minn | Chief and purchasing commissary | | Detail. |
| Denver, Colo | Chief and purchasing commissary | | Detail. |
| San Antonio, Tex | Chief commissary | | Detail. |
| New Orleans, La | Purchasing commissary | | Detail. |
| Hawaii | Depot commissary | | Detail. |
| Alaska | Chief commissary | | Detail. |
| Transport service | Transport commissary | | 1 captain. |
| Other stations, etc | Commissary-General (suspended) | 1 brigadier-general. | |
| | Collector customs, Habana | 1 major | |
| | Colonel Thirty-ninth Infantry | 1 captain | |
| | Unassigned (recently appointed) | | 1 captain. |
| | En route from Philippines | | 1 major. |
| | Total | 20 | 20 |

To give necessary efficiency to the Department, the following additional officers are needed at the places mentioned:

| | |
|---|---|
| Washington, D. C., Office of the Commissary-General of Subsistence | 1 |
| New York City, purchasing commissary, assistant | 1 |
| New York City, chief commissary | 1 |
| Chicago, Ill., purchasing commissary, assistant | 1 |
| Chicago, Ill., chief commissary | 1 |
| San Francisco, Cal., chief commissary | 1 |
| St. Paul, Minn., chief and purchasing commissary | 1 |
| Denver, Colo., chief and purchasing commissary | 1 |
| San Antonio, Tex., chief and purchasing commissary | 1 |
| New Orleans, La., purchasing commissary | 1 |
| Hawaii, depot commissary | 1 |
| Alaska, chief commissary | 1 |
| Transport service | 10 |
| Total | 22 |

In the matter of the rank of the officers in the rearrangement proposed, I beg to say that the measure involves the addition of the grades of 1 colonel, 3 lieutenant-colonels, and 4 majors, to be filled by promotions within the present regular establishment, and the addition of 32 captaincies, to be filled by original appointment, the total strength of the Department being increased to 62 officers as against the 22 now on the regular roster, it being contemplated to dispense with all service under volunteer commissions in the Subsistence Department.

The need of officers of high rank is illustrated in the case of the chief commissaryships in the Philippines and in Cuba, where the positions are held by officers of the grade of major only—one being of the regular establishment and the other of the volunteers. So of the chief commissaryships and principal purchasing commissaries at Chicago and San Francisco, where the chief and purchasing commissaries are both of the grade of major only, the chief commissary at San Francisco being of the volunteers and an assistant to the purchasing commissary at the same time. At the headquarters of the Department of the Pacific in the Philippines, the adjutant-general is of the rank of colonel; the inspector-general is of the rank of lieutenant-colonel; the chief surgeon, colonel; the chief paymaster, lieutenant-colonel; the ordnance officer, lieutenant-colonel; and the signal officer, lieutenant-colonel. At the headquarters of the Division of Cuba the adjutant-general is of the rank of lieutenant-colonel; inspector-general, colonel; chief surgeon, lieutenant-colonel; signal officer, colonel. The chief quartermaster in Chicago is of the rank of colonel; the chief quartermaster in San Francisco, lieutenant-colonel. It is true that the rank of officers holding these important positions in other supply departments may be changed at any time by a new assignment, but the general level of rank shown by this recital is established for other staff departments, and there should be positions provided in the Subsistence Department to permit the assignment of officers of equal rank to places requiring coordinate service. There should be an increase of a sufficient number of captains to furnish one for duty as transport commissary on each vessel of the army transport service.

It is considered that the foregoing rearrangement and additions are necessary to the efficiency of the department under existing condition and until the reorganization of the Army which seems to be in contemplation on July 1, 1901. With the wide dispersion of the Army that must continue after that date, it can not be now seen that the Subsistence Department can suffer any reduction from the number now asked for.

I have the honor, therefore, to request that a copy of this communication be forwarded to the President of the Senate and the Speaker of the House, if the measure proposed meets your approval, with the earnest request that legislation be obtained at the earliest date possible in the line of the suggestions herein contained.

Again on February 13, 1900, I addressed the Secretary of War as follows:

In 1895, during the administration of Mr. Lamont, four officers were taken away from the Subsistence Department—that is, the Department was reduced from 26 to 22. Of these 22 officers, there are now 1 suspended; 1 a collector of customs at Habana; 1 a colonel of a regiment, and another who probably will not be available for duty for a long time, thus leaving the Department practically with 8 officers less in the regular establishment than it had in 1895 when the reduction took place and the Army was but 25,000 men.

The condition of the Department to-day is that we have no chief commissary at Governors Island, a department that has 47 posts, nor have we an assistant to the purchasing officer in New York City, where the purchases are indeed exceptionally large; nor have we at Chicago a chief commissary for the Department of the Lakes, where there are 5 posts, and where the purchasing conditions are similar to those in New York City. We have no commissary whatever at the depot at New Orleans, none at St. Paul, for the department and depot; none at Omaha, Denver, San Antonio, and one too few at the depot in San Francisco. Because of this state of affairs it is asked that the Department be increased to the number it was before the reduction made by Secretary Lamont in 1895; and in view of the conditions hereinbefore pointed out, consideration be given to the necessity for additional numbers and instead of giving us the four officers to put us back to where we were in 1895, that we get eight to immediately meet the conditions pointed out above, and remove the tension which now exists in the Department.

A copy of the following bill was handed the Adjutant-General of the Army February 21, 1900:

A BILL to increase the efficiency of the Subsistence Department of the Army.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there are hereby added to the Subsistence Department of the Army one assistant commissary-general of subsistence with the rank of colonel of cavalry; one assistant commissary-general of subsistence with the rank of lieutenant-colonel of cavalry; two commissaries of subsistence with the rank of major of cavalry; and four commissaries of subsistence with the rank of captain of cavalry. The positions above the grade of captain hereby created shall be filled by regular promotion, according to seniority, of the present officers in the Subsistence Department of the Regular Army, the eight resulting vacancies in the grade of captain being filled by appointment from the line under existing laws.

This last communication was sent by the Secretary of War on February 28, 1890, to the chairman of the Military Committee, House of Representatives, as follows:

> I have the honor to transmit herewith a bill to increase the number of officers in the Subsistence Department of the Regular Army. The number of officers in this Department is not sufficient to meet the demands of the service and to insure the purchase and prompt supplying involved in subsisting the Army as now employed. Favorable action is requested.

and was accompanied by the following memorandum prepared by me:

> The condition of affairs as pointed out in my letter to the Secretary is spoken of in the minimum. I hardly know how to meet the wants of the Department with the tools with which I have to work. The total cost of the increase per annum would be about $18,000, and this would be repaid to the Government, I may say, five times over in freight alone, without referring to the quality of goods incident to hurried purchase. For instance: if I had an officer at Kansas City, I could ship stores from there to many posts in Texas, Indian Territory, and Kansas, whereas I now have to ship them from elsewhere. Again, the bacon that I send out from Kansas City for San Francisco, I have to send Major Alexander from Chicago to Kansas City, for the purpose of inspection, about twice a month. This is just a fair sample, and since there is not one thing in the whole of this that can accrue to my personal benefit, or to the benefit of anybody but the Government, I beg of you to take a special interest in it.
>
> The increase of colonel and lieutenant-colonel is necessary; it is due to the fact that an officer holding the position of chief commissary at New York or Chicago should have equal rank to men holding corresponding positions. Again, he needs the authority incident to rank; it is due to a proper incentive for promotion; it is also due to the opportunity it will give a few officers who served during the war, now well up on the list, to pass to a higher grade; it is due to a homogeneous organization.

On March 5, 1900, the following bill (H. R. 9150) was introduced in the House of Representatives and referred to the Committee on Military Affairs and ordered to be printed:

A BILL to increase the efficiency of the Subsistence Department of the Army.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there shall be added to the Subsistance Department of the Army one assistant commissary-general of subsistence with the rank of colonel, one assistant commissary-general of subsistence with the rank of lieutenant-colonel, and four commissaries of subsistence with the rank of captain.

On March 21, 1900, it was reported with amendments, committed to the Committee of the Whole House on the state of the Union, and ordered to be printed, as follows:

A BILL to increase the efficiency of the Subsistence Department of the Army.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there shall be added to the Subsistence Department of the Army one assistant commissary-general of subsistence with the rank of lieutenant-colonel, and five commissaries of subsistence with the rank of captain.

As amended, the committee recommended the passage of the bill.

A similar communication to above was sent to the chairman of the Committee on Military Affairs, United States Senate, on the 28th of February, 1900, by the Secretary of War, accompanied by letter of the Acting Commissary-General of Subsistence, dated February 13, 1900, and memorandum of March 1, 1900, as above, together with the following note by me:

One of the most important reasons for a sufficient number of commissary officers is the necessity and economy of being able to buy and inspect supplies at the most advantageous points. The number of officers in the Subsistence Department at present is so small that it is impossible to detail an officer for duty at Kansas City. Consequently, commissary supplies going to New Mexico, Arizona, Texas, and far western points are purchased at Chicago and billed from there instead of Kansas City, at a loss to the Government in the payment of freight, as shown in the following table of freight rates. The saving in freight rates by having a man stationed at Kansas City would, in a very short time, pay his salary several times over. Kansas City is only one of several points where a great saving could be made to the Government, providing a sufficient number of commissaries are provided for such detail.

| | First class. | Second class. | Third class. | Fourth class. | Remarks. |
|---|---|---|---|---|---|
| Fort Leavenworth: | | | | | |
| Chicago | $0.80 | $0.65 | $0.45 | $0.32 | |
| Kansas City | .18 | .15 | .13 | .10 | |
| | .62 | .50 | .32 | .22 | In favor of Kansas City. |
| Fort Riley: | | | | | |
| Chicago | 1.30 | 1.10¼ | .82 | .60 | |
| Kansas City | .50 | .45¼ | .37 | .28 | |
| | .80 | .65 | .45 | .32 | Do. |
| Fort Sill: | | | | | |
| Chicago | 1.40 | 1.33 | 1.07 | .95 | |
| Kansas City | 1.10 | .99 | .89 | .77 | |
| | .40 | .34 | .18 | .18 | Do. |
| Fort Reno: | | | | | |
| Chicago | 1.50 | 1.29 | 1.07 | .89 | |
| Kansas City | .86 | .76 | .67 | .57 | |
| | .64 | .53 | .40 | .32 | Do. |

New Mexico, Arizona, and Texas points: Difference on rate from 10 to 20 cents in favor of Kansas City.

On March 2, 1900, the following bill (S. 3430) was introduced by Mr. Hawley, read twice, and referred to the Committee on Military Affairs:

A BILL to increase the efficiency of the Subsistence Department of the United States Army.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there shall be added to the Subsistence Department of the Army one assistant commissary-general of subsistence with the rank of colonel, one assistant commissary-general of subsistence with the rank of lieutenant-colonel, and four commissaries of subsistence with the rank of captain.

On March 26, 1900, it was reported by the committee to the Senate without amendment, and passed April 5, 1900. The bill was then sent to the House of Representatives and referred to the Committee on Military Affairs April 9, 1900.

On April 25, 1900, it was reported with an amendment, committed to the Committee of the Whole House on the state of the Union, and ordered to be printed, as follows:

AN ACT to increase the efficiency of the Subsistence Department of the United States Army.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there shall be added to the Subsistence Department of the Army one assistant commissary-general of subsistence with the rank of lieutenant-colonel, and five commissaries of subsistence with the rank of captain.

On account of the early closing thereafter of the first session of the Fifty-sixth Congress no further action was taken.

There is no improvement in the condition of the Department over that reported on February 13, 1900, matters being infinitely more unsatisfactory. Since that date one captain has died and his place has been filled by an officer at present inexperienced in subsistence duties; another captain has become incapacitated by disease, necessitating medical treatment which, if not successful, will result in his retirement; another captain who had brief service in the Philippine Islands is incapacitated by reason of sickness, and it is not known when he will be returned to duty. Thus it will be seen that this department is considerably handicapped in the performance of its duties by the smallness of the number of its officers. The trouble in China called for the sending, if possible, to that country of experienced officers to look out for the interests of the Subsistence Department, but the only officers available for such important duties were one volunteer and one of the regular establishment (recently appointed, and who was inexperienced in subsistence duties), and they were accordingly so assigned. It is a matter much to be regretted that the regular establishment of the Subsistence Department is not larger. The need of more officers experienced in the duties of this Department has been greatly felt since the breaking out of the war with Spain, and so long as the Army remains at a strength beyond the peace footing of 1895, viz, 25,000 men, the Subsistence Department should unquestionably be increased in numbers.

In view of this condition of affairs, it is hoped that the Secretary of War will urge Congress at its next session to adopt the bill which passed the Senate on the 5th of April, 1900.

### PRINCIPAL PURCHASING DEPOTS OF THE SUBSISTENCE DEPARTMENT.

Col. C. A. Woodruff, assistant commissary-general of subsistence, was the purchasing and depot commissary at New York City from the date of the last annual report to June 1, 1900, when he was relieved by Capt. John Little, commissary of subsistence, United States Army, and ordered to duty in the Philippine Islands. New York City was and is one of the principal purchasing stations in the department. The purchase and shipment of the immense quantities of subsistence supplies from this point were admirably conducted by Colonel Woodruff, who is entitled to great credit for the performance of the important duties devolving upon him. He also managed the transport service with perfect satisfaction.

Maj. William H. Baldwin, commissary of subsistence, was the purchasing and depot commissary at San Francisco, Cal., during the year, and through his excellent management, good judgment, ability, fidelity, and zeal, and his constant devotion to duty, he supplied with alacrity subsistence stores of the best quality to the Philippines, Hawaii, the relief expedition to China and Alaska, and his management of the transport service was perfection. Major Baldwin's services to the department and in providing for our army in the Philippines and in China are invaluable, and great credit is due him for the satisfactory manner in which he has performed his duty.

Maj. George B. Davis, commissary of subsistence, United States Volunteers, was the purchasing and depot commissary at Chicago, Ill., from July 2, 1899, to October 2, 1899, when he was relieved by Maj. W. L. Alexander, commissary of subsistence, and ordered to duty in the Philippine Islands. This station is a very important one, and the duties devolving upon the subsistence officers, Majors Davis and Alexander, were performed in a very able and creditable manner.

Among the regular officers who have performed duty as volunteers in the Subsistence Department who merit praise for the satisfactory performance of the duties devolving upon them may be mentioned Maj. Hugh J. Gallagher, as chief commissary Department of California, San Francisco, Cal., and chief commissary of the China relief expedition at Taku, China; Maj. Oliver E. Wood, as chief commissary Division of Cuba, and purchasing commissary at Habana, Cuba, and as chief commissary Department of California; Maj. George W. Ruthers, as assistant to the purchasing commissary San Francisco, Cal., and in charge of the transport branch of the service, under the direct supervision of Major Baldwin, commissary of subsistence.

Among the volunteer commissaries who have performed duty in the Subsistence Department, who are entitled to much credit, may be mentioned Capt. S. B. Bootes, as issuing commissary of First Division, Eighth Army Corps, as issuing and shipping commissary at Malolos, in charge of issues of subsistence to Spanish prisoners of war, as depot commissary at Iloilo, and as chief commissary Department of the Visayas, P. I.; Capt. S. M. Milliken as issuing commissary First Division, Eighth Army Corps, P. I.; Capt. Theo. B. Hacker as acting chief commissary Department of the Pacific and Eighth Army Corps, as chief commissary Department of Northern Luzon, as chief commissary Department of Mindanao and Jolo, and as depot commissary at Zamboanga, P. I.

In addition to the above it can be said that, with a single exception among the volunteer commissaries of the department, all have rendered efficient and satisfactory service.

## COMMISSARY SERGEANTS.

The number of commissary sergeants in service at the beginning of the fiscal year was 161. During the year 29 were appointed, 7 were discharged, 1 declined reenlistment, 11 were retired, and 4 died, leaving 167 in the service at the end of the year. By General Orders, No. 17, Headquarters of the Army, February 16, 1900, the Secretary of War authorized the increase of the number of commissary sergeants from 100 to 165, and by General Orders, No. 59, Headquarters of the Army, April 30, 1900, the Secretary of War authorized a still further increase of the number to 200. This increase was brought about by the necessity for an increased number required in the Philippine Islands. Examinations under Army Regulations 91 have been and are being held in the Philippine Islands to establish a list of eligibles, and appointments are being made of such men as are found eligible as fast as the papers are received.

This class of noncommissioned officers are very competent men. They are thoroughly informed in their duties, and it is urgently recommended that when volunteer regiments are formed and volunteer regimental commissaries are required, as well as appointments in the volunteer staff corps in time of war, these vacancies be filled by the selection from among the list of commissary-sergeants. In this way the volunteer regiments will have assigned to them men who are thoroughly competent to do the work of the Subsistence Department and who will be able to better provide for the sustenance of the men, thus tending to promote the health of the commands and increase the effectiveness of the same.

### REGIMENTAL COMMISSARIES AND REGIMENTAL COMMISSARY-SERGEANTS.

By act of Congress approved March 2, 1899, a regimental commissary, with rank of first lieutenant, and a regimental commissary-sergeant were authorized for each regiment of infantry and cavalry. Such organizations now number from 1,200 to 1,400 men, and it is only a matter of prudence to have an officer and one noncommissioned officer to assist him, whose special duty it is to provide for such a large number, particularly in the field, when the regimental officers are always fully occupied with their ordinary duties, and so many of them are liable to be absent, either sick or engaged upon other important duty. The fact of there being so little complaint of inadequacy of food supplies with the troops in the field is, in my opinion, largely due to the fact that these officers and noncommissioned officers are now provided to look after such matters. No regimental organization is complete without such officers, and it is urgently recommended that they be continued. It is also further recommended that a battalion commissary, with rank of first lieutenant, and a battalion commissary-sergant be provided for each battalion of field artillery and for regiments of artillery when serving as infantry.

### CLERICAL WORK, OFFICE COMMISSARY-GENERAL OF SUBSISTENCE.

Statement of accounts current and returns on hand June 30, 1899, received and examined during fiscal year ending June 30, 1900, and on hand at close of same awaiting examination:

| | Accounts current. | Returns of stores. | Returns of property. | Total. |
|---|---|---|---|---|
| On hand June 30, 1899 | 338 | 1,165 | 237 | 1,740 |
| Received during fiscal year 1900 | 5,121 | 3,812 | 1,418 | 10,351 |
| Total | 5,459 | 4,977 | 1,655 | 12,091 |
| Examined during year | 5,272 | 4,818 | 1,628 | 11,718 |
| On hand June 30, 1900 | 187 | 159 | 27 | 373 |

The examination of the accounts current required the verification of 75,908 vouchers, the returns of subsistence stores 57,032, and the returns of subsistence property 6,510 vouchers.

In connection with the examinations 7,289 postal cards were used, and 6,675 letters and 9,726 indorsements were written and recorded.

Contracts for supplies, etc., to the number of 720 were received and acted on.

Certificates of services as acting commissary of subsistence were issued to the number of 502, and of nonindebtedness to the number of 2,158.

Number of claims on hand received and disposed of during the fiscal year ending June 30, 1900:

| | Claims for commutation of rations— While held as prisoner of war in rebel States. | Claims for commutation of rations— While on furlough, and miscellaneous claims. | Total. |
|---|---|---|---|
| On hand June 30, 1899 | 68 | 1,657 | 1,725 |
| Received during the fiscal year 1900 | 168 | 811 | 979 |
| Total | 236 | 2,468 | 2,704 |
| Disposed of during the fiscal year 1900 | 233 | 2,460 | 2,693 |
| On hand June 30, 1900 | 3 | 8 | 11 |

The number of letters, indorsements, and postal cards written during the year in connection with the above claims was 6,091.

### CLERICAL FORCE, OFFICE COMMISSARY-GENERAL OF SUBSISTENCE.

The force of 32 clerks has been increased from time to time since May, 1898, by various acts of Congress authorizing the employment of temporary clerks, of which class there are now 37 paid on the temporary roll. I take the opportunity which this annual report affords of urgently pressing upon the attention of superior authority the justness and reasonableness of a rearrangement of the salaries of the clerical force of this Bureau. With the permanent increase of the Regular Army and the continuance of the Volunteer Army in service the clerical work in this Bureau has been increased in volume and importance. The clerical force, in my opinion, should be graded in accordance with those equitable principles which are to be observed in the arrangement of salaries for other bureaus and departments of the Government. I have, therefore, in submitting the estimate for the clerical force for the fiscal year ending June 30, 1902, asked for a moderate increase of grades of the regular force and have submitted proper items for these increased grades in the estimate. I hope the proposed rearrangement will meet the approval of the Secretary of War and be favorably acted upon by Congress. In connection with the subject of the clerical work of the Bureau I beg to say that from April, 1898, to January 31, 1899, it was found necessary to keep a part of the clerical force on duty beyond office hours. The extra work was cheerfully performed, and it is thought that extra compensation should be paid for the extra work. It is hoped that the Secretary of War will give the matter his favorable consideration.

### OFFICERS OF THE SUBSISTENCE DEPARTMENT.

The subjoined list shows the officers of the Subsistence Department and their duties on October 1, 1900.

Respectfully submitted.

J. F. Weston,
*Acting Commissary-General of Subsistence.*

The honorable the Secretary of War.

*Roster of the Subsistence Department, United States Army, October 1, 1900.*

| Name and rank. | Duty and station. | Assigned to present station. |
|---|---|---|
| COMMISSARY-GENERAL OF SUBSISTENCE. | | |
| *With rank of brigadier-general.* | | |
| Charles P. Eagan | Suspended from rank and duty for six years by General Orders, No. 24, Headquarters of the Army, February 7, 1899. | |
| ASSISTANT COMMISSARIES GENERAL OF SUBSISTENCE. | | |
| *With rank of colonel.* | | |
| John F. Weston | Acting Commissary-General of Subsistence, Washington, D. C. | Apr. 6, 1899 |
| Charles A. Woodruff | Chief commissary, Division of the Philippines, Manila, P. I. | July 17, 1900 |
| *With rank of lieutenant-colonel.* | | |
| John J. Clague | Purchasing commissary, St. Louis, Mo | Mar. 28, 1899 |
| Henry G. Sharpe | Assistant to the Commissary-General of Subsistence, Washington, D. C. | Sept. 15, 1899 |
| Frank E. Nye | Chief commissary, Department of Porto Rico, San Juan, P. R.<br>Purchasing and depot commissary, San Juan, P. R. | Feb. 8, 1899<br>Apr. 11, 1899 |
| COMMISSARIES OF SUBSISTENCE. | | |
| *With rank of major.* | | |
| William L. Alexander | Chief commissary, Department of the Lakes, and purchasing commissary, Chicago, Ill. | Oct. 2, 1899 |
| Henry B. Osgood | Purchasing commissary, Boston, Mass | July 21, 1899 |
| Edward E. Dravo | Under orders for duty as chief commissary, Department of the East, Governors Island, N. Y. | |
| Abiel L. Smith | Assistant to the Commissary-General of Subsistence, Washington, D. C.<br>Disbursing commissary, Washington, D. C | Nov. 7, 1899<br>Jan. 1, 1900 |
| Tasker H. Bliss | Collector of customs for Cuba, port of Habana, Cuba. | Jan. 1, 1899 |
| James N. Allison | Chief commissary, Department of the Columbia, and purchasing commissary, Vancouver Barracks, Wash. | May 23, 1899 |
| William H. Baldwin | Purchasing commissary, San Francisco, Cal | Jan. 22, 1897 |
| David L. Brainard | Purchasing commissary, New York, N. Y<br>Temporarily chief commissary, Department of the East, Governors Island, N. Y. | Sept. 1, 1900<br>Aug. 28, 1900 |
| *With rank of captain.* | | |
| George B. Davis | *See* "Volunteer officers," below. | |
| John H. Duval | Granted two months' leave of absence on surgeon's certificate of disability.<br>Leave on account of sickness extended one month | July 14, 1900<br>Sept. 20, 1900 |
| Barrington K. West | Granted two months' leave of absence on surgeon's certificate of disability. | Sept. 13, 1900 |
| Albert D. Niskern | Chief commissary, Department of Southern Luzon, Manila, P. I., per paragraph 2, Special Orders, No. 57, headquarters, Division of the Philippines, dated June 9, 1900. | July 20, 1900 |
| Robert L. Bullard | Colonel, Thirty-ninth United States Volunteer Infantry, Philippine Islands. | |
| Matt R. Peterson | *See* "Volunteer officers," below. | |
| Charles R. Krauthoff | Assistant to the purchasing commissary, San Francisco, Cal. | Apr. 28, 1900 |
| William H. Bean | In China with United States forces composing the China relief expedition. | |

*Volunteer officers appointed under section 14, act approved March 2, 1899.*

| Name and rank. | Duty and station. | Assigned to present station. |
|---|---|---|
| COMMISSARIES OF SUBSISTENCE. | | |
| *With rank of major.* | | |
| Hugh J. Gallagher | Chief commissary United States forces composing the China relief expedition, Taku, China. | |
| Carroll Mercer | Depot commissary, Quiapo and Ermita, Manila, P. I. | Nov. 7, 1899 |
| Oliver E. Wood | Chief commissary, Department of California, San Francisco, Cal. | Aug. 9, 1900 |
| George B. Davis | Depot commissary, Manila, P. I | Mar. 1, 1900 |
| George W. Ruthers | Chief commissary, Department of Northern Luzon, Manila, P. I. | July 17, 1900 |
| Matt R. Peterson | Chief commissary, Division of Cuba, Habana, Cuba.<br>Purchasing and depot commissary, Habana, Cuba. | July 26, 1900<br>Do. |
| ASSISTANT COMMISSARIES OF SUBSISTENCE. | | |
| *With rank of captain.* | | |
| Theodore B. Hacker | Chief commissary, Department of Mindanao and Jolo, at Zamboanga, island of Mindanao, P. I., per paragraph 2, Special Orders, No. 57, headquarters, Division of the Philippines, dated June 9, 1900. | July 13, 1900 |
| Samuel B. Bootes | Chief commissary, Department of the Visayas<br>Depot commissary, Iloilo, P. I | Apr. 7, 1900<br>July 21, 1899 |
| Eben B. Fenton | Under orders for duty with the Division of the Philippines, P. I. | |
| Frederic H. Pomroy | Depot commissary, Dagupan, P. I., per Special Orders, No. 9, Division of the Philippines, April 18, 1900. | |
| James C. Read | On temporary duty as assistant to chief commissary, Division of the Philippines, Manila, P. I. | |
| Thomas F. Ryan | Under orders for duty with the Division of the Philippines, Philippine Islands. | |
| Harlow L. Street | Depot commissary, Rosales, Luzon, P. I | Feb. 7, 1900 |
| Philip Mothersill | Depot commissary, Habana, Cuba<br>One month leave of absence<br>Leave extended fifteen days | Feb. 20, 1900<br>Aug. 16, 1900<br>Sept. 10, 1900 |
| Ralph Ingalls | Chief commissary, 1st district, Northern Luzon, and depot commissary, Vigan, P. I. | |
| Frank H. Lawton | Commissary and quartermaster on transport Pennsylvania. | |
| Thomas Franklin | Under orders for duty with Division of the Philippines, Philippine Islands. | |
| Henry G. Cole | Chief commissary, 3d district, Department of Southern Luzon, Nueva Caceres, province of Camarines Sur, Luzon, P. I. | |
| John E. Woodward | Chief commissary, 2d district, Department of Northern Luzon, and depot commissary, Aparri, P. I. | |
| Frank B. Watson | Awaiting orders. | |

## CASUALTIES IN THE SUBSISTENCE DEPARTMENT SINCE JULY 1, 1899.—RETIREMENTS, DISCHARGES, DISMISSALS, AND DEATHS.

Maj. Oskaloosa M. Smith, commissary of subsistence, retired February 12, 1900, per Special Order 37, Headquarters of the Army, February 13, 1900.

Maj. Robert H. Fitzhugh, commissary of subsistence of volunteers, honorably discharged to date October 31, 1899, per Special Order 238, Headquarters of the Army, October 12, 1899.

Capt. Joseph B. Handy, commissary of subsistence of volunteers, honorably discharged to date October 31, 1899, per Special Order 237, Headquarters of the Army, October 11, 1899.

Capt. Daniel Van Voorhis, commissary of subsistence of volunteers, honorably discharged to date October 31, 1899, per Special Order 243, Headquarters of the Army, October 19, 1899.

Capt. William H. Anderson, commissary of subsistence of volunteers, honorably discharged to date November 15, 1899, per Special Order 260, Headquarters of the Army, November 7, 1899.

Capt. C. Dupont Coudert, commissary of subsistence of volunteers, honorably discharged to date November 25, 1899, per Special Order 252, Headquarters of the Army, October 28, 1899.

Capt. John Landstreet, jr., commissary of subsistence of volunteers, honorably discharged to date December 31, 1899, per Special Order 286, Headquarters of the Army, December 9, 1899.

Capt. Edward R. Hutchins, commissary of subsistence of volunteers, honorably discharged to date April 22, 1900, per Special Order 86, Headquarters of the Army, April 12, 1900.

Capt. James A. Logan, jr., commissary of subsistence of volunteers, honorably discharged to date May 15, 1900, per Special Order 101, Headquarters of the Army, April 30, 1900.

Capt. Peter C. Deming, acting commissary of subsistence of volunteers, dismissed the service to date June 12, 1900, by sentence of general court marshal, per General Order 80, Headquarters of the Army, June 8, 1900.

Capt. John Little, commissary of subsistence, United States Army, died of typhoid fever at Governors Island, New York Harbor, N. Y., July 28, 1900, and was buried at Westpoint, N. Y. Capt. Little performed valuable service during the war with Spain in supplying the troops with an abundance of good and wholesome food, and his loss to the Subsistence Department is great.

Capt. Seth M. Milliken, acting commissary of subsistence of volunteers, honorably discharged to date August 25, 1900, per Special Order 191, Headquarters of the Army, August 15, 1900.

*Roster of commissary-sergeants, June 30, 1900.*

| | Name. | Station. | Assigned to present station. |
|---|---|---|---|
| 1 | Abel, Charles | Mayari, Cuba | Mar. 26, 1900 |
| 2 | Adams, Frank E | San Juan, P. R | Apr. 27, 1900 |
| 3 | Alles, Henry H | Fort St. Michael, Alaska | Apr. 16, 1900 |
| 4 | Ambrose, Edwin F | Fort McPherson, Ga | Dec. 28, 1898 |
| 5 | Appel, Anton | Fort Brown, Tex | May 3, 1900 |
| 6 | Bader, Charles | Cebu, P. I | May 10, 1899 |
| 7 | Bantzhaff, Georg | Fort Duchesne, Utah | May 1, 1900 |
| 8 | Baughn, Wesley | Fort Crook, Nebr | Oct. 28, 1898 |
| 9 | Beardslee, Lucius W | Fort McDowell, Cal | Apr. 28, 1900 |
| 10 | Beresford, Harry | Fort Wood, N. Y. Harbor | May 9, 1900 |
| 11 | Bitter, John | San Juan, P. R | June 29, 1899 |
| 12 | Blake, Patrick J | Manila, P. I | Jan. 8, 1900 |
| 13 | Bliesener, Charles | Fort Slocum, N. Y | Jan. 20, 1899 |
| 14 | Bliss, Fred P | Hospital ship Relief | Jan. 29, 1899 |
| 15 | Bolton, George | Lipa, Luzon, P. I | June 25, 1900 |
| 16 | Bond, Loring A | Fort Bayard, N. Mex | June 15, 1899 |
| 17 | Boog, William H | Manila, P. I | Feb. 1, 1900 |
| 18 | Borstelmann, D. B | Aparri, P. I | Feb. 16, 1900 |
| 19 | Borton, Levi N. | San Pablo, P. I | June 23, 1900 |
| 20 | Britt, Jackson S | Manila P. I | |
| 21 | Brown, John | Habana, Cuba | June 20, 1899 |
| 22 | Browne, William J | Cardenas, Cuba | Jan. 21, 1899 |
| 23 | Burgoyne, S. F | Fort Logan H. Roots, Ark | Jan. 31, 1899 |
| 24 | Castle, George P | Laoag, Luzon, P. I | Mar. 14, 1900 |
| 25 | Chapman, Henry | Fort Sheridan, Ill | Sept. 28, 1898 |

*Roster of commissary-sergeants, June 30, 1900*—Continued.

| | Name. | Station. | Assigned to present station. |
|---|---|---|---|
| 26 | Cline, Wm. M | Calamba, P. I | May 7, 1900 |
| 27 | Coffman, Herman | Fort Assiniboine, Mont | Apr. 29, 1900 |
| 28 | Collins, James | Fort Sill, Okla | Feb. 4, 1898 |
| 29 | Cone, Charles | San Carlos, Ariz | July 15, 1899 |
| 30 | Connolly, Wm. M | Fort Mason, Cal | Dec. 1, 1899 |
| 31 | Cornell, Francis B | Transport Seward | May 31, 1900 |
| 32 | Crone, Isidore | Manila, P. I | June 28, 1900 |
| 33 | Damus, Carl | Fort Morgan, Ala | Apr. 9, 1898 |
| 34 | De Birny, Louis V | Westpoint, N. Y | Jan. 12, 1899 |
| 35 | Denner, Otto | Manila, P. I | June 2, 1900 |
| 36 | Derrick, Theodore F | Madison Barracks, N. Y | Mar. 19, 1900 |
| 37 | Dobler, Fred | On furlough, commissioned first lieutenant Forty-ninth Volunteer Infantry. | Sept. 27, 1899 |
| 38 | Draddy, John | Fort Porter, N. Y | Oct. 15, 1898 |
| 39 | Dugger, Cyrus F | Jefferson Barracks, Mo | Mar. 17, 1899 |
| 40 | Eckardt, William F | Fort Monroe, Va | Jan. 17, 1899 |
| 41 | Eckhart, Paul | Adjuntas, P. R | Mar. 25, 1900 |
| 42 | Edmunds, Jules P | Fort Columbus, N. Y | Oct. 27, 1899 |
| 43 | Elchinger, Paul | Trinidad, Cuba | Mar. 19, 1900 |
| 44 | Ensslin, Hermann E | Humacoa, P. R | June 14, 1899 |
| 45 | Faringhy, Edwin L | Fort Huachuca, Ariz | Aug. 25, 1897 |
| 46 | Faringhy, William H | Fort Wayne, Mich | June 9, 1900 |
| 47 | Favier, Joseph A | Rosales, P. I | Feb. 25, 1900 |
| 48 | Fern, Arthur | Fort Wadsworth, N. Y | Mar. 13, 1897 |
| 49 | Flach, John | Fort Warren, Mass | Apr. 17, 1899 |
| 50 | Foley, Malachy | Fort Clark, Tex | Aug. 30, 1898 |
| 51 | Fortiner, C. A. | On furlough | Apr. 14, 1900 |
| 52 | Froelich, Joseph | Post near Port Valdez, Alaska | Apr. 29, 1900 |
| 53 | Geiling, Geo | St. Francis Barracks, Fla | Jan. 17, 1899 |
| 54 | Geminer, Chas. L | Guantanamo, Cuba | Dec. 16, 1898 |
| 55 | Gosline, John A | Manila, P. I | May 28, 1900 |
| 56 | Gould, Clarence S | Fort Gibbon, Alaska | July 27, 1899 |
| 57 | Green, H. L | Vancouver Barracks, Wash | Jan. 12, 1899 |
| 58 | Greene, James J | Hdqrs. Dept. Porto Rico, San Juan, P. R | Jan. 4, 1899 |
| 59 | Grigsby, Jet | Fort Reno, Okla | May 18, 1900 |
| 60 | Grum, William | Fort Ethan Allen, Vt | Sept. 20, 1898 |
| 61 | Hanaghan, Jas | Habana, Cuba | Apr. 22, 1899 |
| 62 | Harrell, Geo. H | Fort Screven, Ga | Jan. 3, 1900 |
| 63 | Harris, Simon P | Fort Douglas, Utah | Nov. 12, 1898 |
| 64 | Hoskins, Henry A | Mayaguez, P. R | Nov. 21, 1898 |
| 65 | Hubbard, Weston A | Fort Apache, Ariz | Apr. 23, 1892 |
| 66 | Jamison, Wm. H | Fort Sherman, Idaho | May 6, 1900 |
| 67 | Jennings, James | Fort Washakie, Wyo | Dec. 15, 1899 |
| 68 | Jensen, Julius | Fort McIntosh, Tex | Mar. 31, 1899 |
| 69 | Jones, Thomas H | Fort Hunt, Va | July 7, 1899 |
| 70 | Kaltschmidt, Geo. M | Santiago, Cuba | Nov. 11, 1899 |
| 71 | Karbach, Jacob | Alcatraz Island, Cal | Feb. 14, 1899 |
| 72 | Kehrle, Albert | Fort Mott, N. J | Feb. 12, 1900 |
| 73 | Kenealy, Patrick | Fort Du Pont, Del | Jan. 19, 1899 |
| 74 | Kennedy, John | Furlough (First Lieutenant Forty-first Volunteer Infantry). | Sept. 20, 1899 |
| 75 | Kidwell, Frank A | Placetas Barracks, Cuba | July 4, 1899 |
| 76 | Klein, Charles | Fort Williams, Me | Jan. 29, 1900 |
| 77 | Kohlhepp, Carl | Fort Logan, Colo | July 1, 1898 |
| 78 | Kolster, D. A. H | San Luis, Cuba | Apr. 3, 1900 |
| 79 | Kotwall, John | Iloilo, P. I | Nov. 2, 1899 |
| 80 | Laskowski, Hugo | Henry Barracks, P. R | July 24, 1899 |
| 81 | Laufer, George | Caibarien Barracks, Cuba | May 26, 1899 |
| 82 | Lear, Edwin E | Zamboanga, P. I | Jan. 16, 1900 |
| 83 | Lehman, Frank B | Sagua la Grande, Cuba | May 13, 1900 |
| 84 | Lemmer, Louis | Manzanillo, Cuba | Oct. 18, 1898 |
| 85 | Loewidt, Max I | Batangas, Luzon, P. I | Feb. 23, 1900 |
| 86 | Lynch, Patrick | Manila, P. I | May 16, 1900 |
| 87 | McCarthy, John | Holguin, Cuba | July 30, 1899 |
| 88 | McIntosh, Frank C | Fort McHenry, Md | Jan. 31, 1899 |
| 89 | McLees, Paul | Jackson Barracks, La | Apr. 21, 1900 |
| 90 | McMahon, John | Transport Warren | Aug. 1, 1898 |
| 91 | McManus, Patrick J | Fort Niagara, N. Y | Oct. 8, 1898 |
| 92 | McVean, Charles C | Habana, Cuba | Apr. 6, 1900 |
| 93 | Machle, Jerry B | Columbus Barracks, Ohio | Oct. 21, 1898 |
| 94 | Magen, Max | Fort Thomas, Ky | June 3, 1898 |
| 95 | Mansie, William | Dagupan, P. I | Dec. 8, 1899 |
| 96 | Meister, Frederick | West Point, N. Y | Apr. 7, 1898 |
| 97 | Merrill, Andrew J | Iloilo, P. I | July 15, 1899 |
| 98 | Mesterman, John | Transport Rosecrans | May 27, 1900 |
| 99 | Meston, John | Transport Pennsylvania | Mar. 31, 1900 |
| 100 | Miller, Chas | Quiapo Sales Depot, Manila, P. I | Oct. 7, 1899 |
| 101 | Miller, Daniel E | Fort D. A. Russell, Wyo | Dec. 29, 1898 |
| 102 | Mills, Milton A | Fort Dade, Fla | June 9, 1900 |
| 103 | Moberg, Chas. A | Fort Preble, Me | Nov. 28, 1899 |
| 104 | Morgan, Willis E | Quemados, Cuba | Dec. 31, 1899 |

*Roster of commissary-sergeants, June 30, 1900*—Continued.

| | Name. | Station. | Assigned to present station. |
|---|---|---|---|
| 105 | Morrison, Wm. D | Vigan, P. I | Jan. 10, 1900 |
| 106 | Morrow, James A | In field, Alaska | Mar. 23, 1900 |
| 107 | Muller, Richard | Fort Adams, R. I | Dec. 7, 1898 |
| 108 | Muraszko, Felix | Bacolod, Negros, P. I | July 3, 1899 |
| 109 | Murray, Michael E | Fort Hamilton, N. Y | Feb. 26, 1900 |
| 110 | Niemann, August | Key West Barracks, Fla | Feb. 27, 1899 |
| 111 | O'Brien, John | Fort St. Michael, Alaska | July 1, 1899 |
| 112 | O'Keefe, J. J | Fort Riley, Kans | Apr. 16, 1900 |
| 113 | O'Reilly, Garret | Presidio of San Francisco, Cal | Nov. 28, 1899 |
| 114 | Otten, Benjamin | Santiago, Cuba | Oct. 30, 1898 |
| 115 | Peterson, Peter | Fort Grant, Ariz | Apr. 23, 1900 |
| 116 | Pollak, Marcus J | Fort Schuyler, N. Y | Dec. 16, 1899 |
| 117 | Powers, James | Sancti Spiritus, Cuba | June 15, 1900 |
| 118 | Pray, George A | Cavite, P. I | Oct. 8, 1899 |
| 119 | Pulsifer, George | Fort Leavenworth, Kans | Aug. 1, 1898 |
| 120 | Raik, Oscar | Fort Bliss, Tex | Feb. 18, 1900 |
| 121 | Redling, Charlie | Manila, P. I | May 29, 1900 |
| 122 | Reuter, William | Fort Washington, Md | Oct. 31, 1897 |
| 123 | Rodgers, Henry | Fort Keogh, Mont | Sept. 29, 1898 |
| 124 | Rohde, Ferdinand | Sullivans Island, S. C | Oct. 16, 1899 |
| 125 | Roos, August J | Transport Grant | Mar. 20, 1899 |
| 126 | Rose, Franklin | Fort San Jacinto, Galveston, Tex | Apr. 20, 1899 |
| 127 | Roth, Philip | Fort Yellowstone, Wyo | July 15, 1896 |
| 128 | Rumpff, Richard F | Fort Trumbull, Conn | Oct. 26, 1898 |
| 129 | Ryan, Andrew | San Diego Barracks, Cal | July 21. 1899 |
| 130 | Ryan, John L | Matanzas, Cuba | May 17, 1900 |
| 131 | Salter, John | Fort Caswell, N. C | May 2, 1900 |
| 132 | Sanders, Charles | Cabana Barracks, Cuba | Feb. 5, 1900 |
| 133 | Schiller, Frederick | Office depot commissary, Manila, P. I | Apr. 30, 1900 |
| 134 | Schiller, Julius | Willets Point, N. Y | Apr. 6, 1899 |
| 135 | Semler, Adolph | Fort Snelling, Minn | Feb. 25, 1900 |
| 136 | Simeson, Charles W | Transport Egbert | Apr. 15, 1899 |
| 137 | Simon, Henry C | Fort Ringgold, Tex | May 22, 1900 |
| 138 | Smart, Alexander | Vancouver Barracks, Wash | May 31, 1900 |
| 139 | Smith, Louis W | Fort Egbert, Alaska | Aug. 6, 1899 |
| 140 | Steiner, Emil H | Fort Walla Walla, Wash | Mar. 14, 1900 |
| 141 | Stephan, Charles | Transport Sherman | May 10, 1899 |
| 142 | Stephenson, Frank | Washington Barracks, D. C | Feb. 10, 1900 |
| 143 | Stubley, John W | Fort Wright, Wash | June 5, 1900 |
| 144 | Summerlin, John D | Ciego de Avila, Cuba | June 10, 1899 |
| 145 | Tabor, William A | Iloilo, Panay, P. I | Dec. 26, 1899 |
| 146 | Tarbet, Robert A | Fort Brady, Mich | Nov. 12, 1898 |
| 147 | Thompson, Joseph | Guanajay Barracks, Cuba | Jan. 16, 1899 |
| 148 | Thompson, Karl J | Vancouver Barracks, Wash | May 18, 1900 |
| 149 | Titus, Charles W | Fort Sam Houston, Tex | Jan. 7, 1899 |
| 150 | Turner, John M | Fort Myer, Va | Dec. 2, 1899 |
| 151 | Wagner, Frederick | On furlough | June 15, 1900 |
| 152 | Wallenstein, Andrew | United States Army General Hospital, Presidio of San Francisco, Cal. | May 11, 1900 |
| 153 | Walser, John C | Presidio of San Francisco, Cal | Nov. 30, 1899 |
| 154 | Weege, Richard | Indan, Cavite, P. I | Apr. 2, 1900 |
| 155 | Wentzel, Geo | Fort Niobrara, Nebr | Oct. 7, 1899 |
| 156 | Wikander, John | Angeles, P. I | Apr. 25, 1899 |
| 157 | Wilson, Henry | Fort Wingate, N. Mex | May 7, 1899 |
| 158 | Wilson, John | Fort Hancock, N. J | Apr. 24, 1900 |
| 159 | Wilson, John B | Fort Harrison, Mont | July 21, 1899 |
| 160 | Wilson, John E | United States Army hospital ship Relief | June 18, 1900 |
| 161 | Wood, Arthur G | On furlough | May 29, 1900 |
| 162 | Woodcock, Charles | Binan, Luzon, P. I | June 22, 1900 |
| 163 | Woods, James F | Camp McKinley, H. I | Nov. 14, 1898 |
| 164 | Ziesing, Joseph | Fort Barrancas, Fla | Mar. 21, 1900 |
| 165 | Zimmerman, Chas. A | Fort Thomas, Ky | June 30, 1900 |
| 166 | Zimmerman, Chas. F. B | Manila, P. I | Aug. 15, 1898 |
| 167 | Zimmerman, Anton | San Isidore, Luzon | Jan. 10, 1900 |

# REPORT OF THE SURGEON-GENERAL.

# REPORT

OF

# THE SURGEON-GENERAL.

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**War Department,**
**Surgeon-General's Office,**
*Washington, D. C., October 17, 1900.*

Sir: In submitting a report of my administration of the duties of this office during the past year, I have the honor, first, to invite attention to a statement of the financial transactions for the year ended June 30, 1900.

## FINANCIAL STATEMENT, 1900.[1]

### *Medical and hospital department, 1900.*

| | | |
|---|---|---|
| Appropriated by act approved March 3, 1899 | $1,500,000.00 | |
| Transferred from appropriation "Medical and hospital department, 1899," by act approved February 9, 1900 | 500,000.00 | |
| | | $2,000,000.00 |
| Gain on exchange of funds to insular possessions | 12.50 | |
| Refunded during the year (including transfer settlements by Treasury Department to adjust appropriations, $12) | 424.54 | |
| | | 437.04 |
| Total to be accounted for | | 2,000,437.04 |
| Disbursed during the year:[2] | | |
| Expenses of medical supply depots | 547.03 | |
| Medical supplies | 1,164,419.72 | |
| Medical attendance and medicines | 13,680.92 | |
| Medical expenses of recruiting | 49,751.04 | |
| Pay of nurses | 124,146.24 | |
| Pay of other employees | 137,286.72 | |
| Washing of hospital linen | 58,005.54 | |
| Expressage on medical property | 948.18 | |
| Exchange on funds to insular possessions | 437.50 | |
| Notarial fees | 30.75 | |
| | | 1,549,253.64 |

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[1] The disbursements in this statement include settlements with public creditors made by the accounting officers of the Treasury and charged by them to these appropriations.

[2] Disbursements during June and balance June 30, 1900, at Cebu, P. I., have not at this date (October 10, 1900) been accounted for to this office, doubtless because of irregularity of mail communication.

| | | |
|---|---|---|
| Transferred by Treasury settlements to adjust appropriations | | $5,719.51 |
| Balances on hand June 30, 1900: | | |
| In United States Treasury | $337,239.56 | |
| In hands of disbursing officers— | | |
| New York | 34,922.17 | |
| Washington | 15,083.34 | |
| St. Louis | 14,427.01 | |
| San Francisco | 11,824.37 | |
| St. Michael, Alaska | 4,790.05 | |
| Honolulu, H. I | 1,528.18 | |
| Manila, P. I | 17,491.47 | |
| Iloilo, P. I | 603.93 | |
| Cebu, P. I. (May 31, 1900)[1] | 93.67 | |
| Aparri, P. I | 31.54 | |
| Havana, Cuba | 1,696.83 | |
| Santiago, Cuba | 406.41 | |
| San Juan, P. R | 2,668.08 | |
| Ponce, P. R | 2,655.95 | |
| Hospital ship *Relief* | 1.33 | |
| | | 445,463.89 |
| Total accounted for | | 2,000,437.04 |

### *Medical and hospital department, 1899.*

| | | |
|---|---|---|
| Balances on hand July 1, 1899, acts of March 15, 1898, January 5, 1899, and March 3, 1899 | | [2]$1,454,151.99 |
| Gain on exchange of funds to insular possessions | $19.36 | |
| Refunded during the year (including transfer settlements by Treasury Department to adjust appropriations, $6,323.99) | 7,071.44 | |
| | | 7,090.80 |
| Total to be accounted for | | 1,461,242.79 |
| Disbursed during the year: | | |
| Expenses of medical supply depots | 69.18 | |
| Medical supplies | 478,817.75 | |
| Medical attendance and medicines | 41,640.94 | |
| Medical expenses of recruiting | 7,125.98 | |
| Medical expenses of muster out | 99.60 | |
| Pay of nurses | 14,150.24 | |
| Pay of other employees | 3,118.33 | |
| Washing of hospital linen | 4,527.94 | |
| Expressage on medical property | 1,661.28 | |
| Exchange on funds to insular possessions | 114.57 | |
| | | 551,325.81 |
| Transferred by Treasury settlements to adjust appropriations | | 24,835.28 |
| Transferred to appropriation "Medical and hospital department, 1900," by act approved February 9, 1900 | | 500,000.00 |
| Balances on hand June 30, 1900: | | |
| In United States Treasury | $349,837.31 | |
| In hands of disbursing officers: | | |
| Washington, D. C | 27,946.97 | |
| Manila, P. I | 7,297.42 | |
| | | 385,081.70 |
| Total accounted for | | 1,461,242.79 |

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[1] See note 2 on page 517.

[2] The balance June 30, 1899, as given in my last annual report ($1,448,387.37), was based in part upon information by cable from Manila, which was subsequently, upon the receipt of itemized accounts by mail, found to be erroneous.

### *Medical and hospital department, 1898.*

| | | |
|---|---|---|
| Balances on hand July 1, 1899, act of March 2, 1897 | | $363.18 |
| Refunded during the year | | 14.37 |
| Total to be accounted for | | 380.55 |
| Disbursed during the year: | | |
| Medical supplies | $26.72 | |
| Medical attendance and medicines | 339.05 | |
| | | 365.77 |
| Transferred to surplus fund | | 14.78 |
| Total accounted for | | 380.55 |

### *Medical and hospital department, January 1, 1899.*

| | | |
|---|---|---|
| Balances on hand July 1, 1899, acts of May 4, June 8, and July 7, 1898 (net) | | [1]$4,918.66 |
| Refunded during the year (including transfer settlements by Treasury Department to adjust appropriations, $24,834) | | 24,895.63 |
| Total to be accounted for | | 29,814.29 |
| Disbursed during the year: | | |
| Medical supplies | $654.02 | |
| Medical attendance and medicines | 48.00 | |
| Medical expenses of recruiting | 90.00 | |
| Pay of nurses | 1,604.87 | |
| Pay of other employees | 321.68 | |
| Washing of hospital linen | 564.17 | |
| Miscellaneous | 10.31 | |
| | | 3,293.05 |
| Balances on hand June 30, 1900: | | |
| In United States Treasury | 25,991.71 | |
| In hands of disbursing officer at Manila, P. I | 529.53 | |
| | | 26,521.24 |
| Total accounted for | | 29,814.29 |

### *Medical and hospital department, certified claims.*

| | |
|---|---|
| Appropriated by act approved June 6, 1900 | $318.93 |
| Disbursed during the year | 318.93 |

### *Appropriation for national defense, act of March 9, 1898.*

| | |
|---|---|
| Allotment by the President April 16, 1898: | |
| Balance on hand July 1, 1899 | $5.51 |
| Balance in United States Treasury June 30, 1900 | 5.51 |
| Reallotment by the President September 8, 1898: | |
| Balance on hand July 1, 1899 | 1,679.78 |
| Refunded during the year (including transfer settlements by Treasury Department to adjust appropriations, $34) | 51.00 |
| Total to be accounted for | 1,730.78 |

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[1] Actual balances, as shown by the books of this office, $12,715.27, of which $7,796.61 was pledged to honor drafts made by the medical disbursing officer in the Philippine Islands on the Hongkong and Shanghai Banking Corporation under a letter of credit issued in his favor. These drafts were paid by the bank and the proceeds thereof were accounted for during the year ended June 30, 1899. The bank was reimbursed by the Treasury Department in August, 1899.

| | | |
|---|---|---|
| Reallotment by the President September 8, 1898—Continued. | | |
| Disbursed during the year: Medical attendance and medicines | | $138.19 |
| Balance in United States Treasury June 30, 1900 | | 1,592.59 |
| Total accounted for | | 1,730.78 |
| Allotment by the President October 6, 1898: | | |
| Balance on hand July 1, 1899 | | 44,521.89 |
| Refunded during the year | | 194.58 |
| Total to be accounted for | | 44,716.47 |
| Disbursed during the year: | | |
| Expenses of medical supply depots | $1.50 | |
| Medical supplies | 834.82 | |
| Medical attendance and medicines | 17,938.99 | |
| Medical expenses of recruiting | 438.70 | |
| Pay of nurses | 333.75 | |
| Washing of hospital linen | 302.07 | |
| | | 19,849.83 |
| Transferred by Treasury settlement to adjust appropriation | | 742.01 |
| Balance in United States Treasury June 30, 1900 | | 24,124.63 |
| Total accounted for | | 44,716.47 |
| Allotment by the President November 22, 1898: | | |
| Balance on hand July 1, 1899 | | 26,236.30 |
| Refunded during the year | | 12.00 |
| Total to be accounted for | | 26,248.30 |
| Disbursed during the year: | | |
| Medical supplies | 1,100.95 | |
| Medical attendance and medicines | 53.66 | |
| Medical expenses of recruiting | 3,300.31 | |
| Pay of nurses | 54.00 | |
| Washing of hospital linen | 257.70 | |
| | | 4,766.62 |
| Balance on hand June 30, 1900: | | |
| In United States Treasury | 13,153.26 | |
| In hands disbursing officer, Washington, D. C | 8,328.42 | |
| | | 21,481.68 |
| Total accounted for | | 26,248.30 |

### *Artificial limbs, 1900.*

| | |
|---|---|
| Appropriated by act approved March 3, 1899 | $547,275.00 |
| Disbursed during the year | 503,972.95 |
| Balance on hand June 30, 1900 | 43,302.05 |

### *Artificial limbs, 1899 (act approved July 1, 1898).*

| | | |
|---|---|---|
| Balance July 1, 1899 | | $2,621.09 |
| Disbursed during the year | $2,396.09 | |
| Transferred by Treasury settlements to adjust appropriations. | 225.00 | |
| | | 2,621.09 |

### *Artificial limbs, 1898 (act approved June 4, 1897).*

| | |
|---|---|
| Balance July 1, 1899 | $16,516.21 |
| Refunded during the year (being the amount transferred by Treasury Department to adjust appropriations) | 150.00 |
| Total to be accounted for | 16,666.21 |
| Disbursed during the year | 1.20 |
| Transferred to surplus fund | 16,665.01 |
| Total accounted for | 16,666.21 |

### *Artificial limbs, 1897 (act approved June 11, 1896).*

| | |
|---|---|
| Balance July 1, 1899 | $540.16 |
| Refunded during the year (being the amount transferred by the Treasury Department to adjust appropriations) | 75.00 |
| Total to be accounted for | 615.16 |
| Transferred to surplus fund | 615.16 |

### *Appliances for disabled soldiers, 1900.*

| | |
|---|---|
| Appropriated by act approved March 3, 1899 | $2,000.00 |
| Disbursed during the year | 1,020.50 |
| Balance on hand June 30, 1900 | 979.50 |

### *Appliances for disabled soldiers, 1899 (act approved July 1, 1898).*

| | |
|---|---|
| Balance July 1, 1899 | $722.11 |
| Disbursed during the year | 32.00 |
| Balance on hand June 30, 1900 | 690.11 |

### *Appliances for disabled soldiers, 1898 (act approved June 4, 1897).*

| | |
|---|---|
| Balance July 1, 1899 | $590.54 |
| Transferred to surplus fund | 590.54 |

### *Appliances for disabled soldiers, 1897 (act approved June 11, 1896).*

| | |
|---|---|
| Balance July 1, 1899 | $285.02 |
| Transferred to surplus fund | 285.02 |

### *Army Medical Museum, 1900.*

| | |
|---|---|
| Appropriated by act approved March 3, 1899 | $5,000.00 |
| Disbursed during the year | 2,886.57 |
| Balance on hand June 30, 1900 | 2,113.43 |

### *Army Medical Museum, 1899 (act approved March 15, 1898).*

| | |
|---|---|
| Balance July 1, 1899 | $1,636.31 |
| Disbursed during the year | 1,621.51 |
| Balance on hand June 30, 1900 | 14.80 |

### *Army Medical Museum, certified claims.*

| | |
|---|---|
| Appropriated by act approved June 6, 1900 | $0.75 |
| Disbursed during the year | .75 |

### *Library, Surgeon-General's Office, 1900.*

| | |
|---|---|
| Appropriated by act approved March 3, 1899 | $10,000.00 |
| Disbursed during the year | 8,775.37 |
| Balance on hand June 30, 1900 | 1,224.63 |

### *Library, Surgeon-General's Office, 1899 (act approved March 15, 1898).*

| | |
|---|---|
| Balance July 1, 1899 | $273.36 |
| Disbursed during the year | 273.36 |

### *Furnishing trusses to disabled soldiers (sections 1176, 1177, 1178, Revised Statutes, and act of March 3, 1879).*

| | |
|---|---|
| Expended during the year | $7,798.47 |

## ARTIFICIAL LIMBS AND THEIR COMMUTATION.

Under the laws relating to artificial limbs there were furnished in kind during the year ended June 30, 1900, 292 artificial legs, 9 artificial arms, 2 artificial feet, and 1 apparatus for exsection. Commutation certificates were issued for 2.570 cases of amputated leg, 2,759 of amputated arm, 66 of amputated foot, and for 2,881 cases of the loss of the use of a limb. The sum of $506.595.24 was expended during the year in settling these claims.

The benefits under these laws recur every three years. The claimants who are being paid during the current year ending June 30. 1901. are the survivors of the beneficiaries of the year ended June 30, 1898. The sum of $173.000 was estimated for and appropriated for their benefit. The claims which will be presented for settlement during the year ending June 30, 1902, will be made by the survivors of those who were last paid during the year ended June 30, 1899, when $125,038.91 was disbursed in settlement. Estimates for $125.000 have been submitted for 1902. It was considered injudicious to reduce the estimates below the sum required three years ago, as deaths among disabled veterans of the civil war may to a considerable extent be offset by cases arising as a result of disabilities incurred during the past two years in Cuba, Porto Rico, and the Philippines.

## APPLIANCES FOR DISABLED SOLDIERS.

During the past year the sum of $1,052.50 was expended for 140 appliances issued to disabled soldiers.

## TRUSSES.

The number of trusses issued and fitted during the year was 1,054.

## PROVIDENCE HOSPITAL.

The act of Congress approved June 6, 1900, appropriated $19,000 for the support and medical treatment of destitute patients in the city of Washington, D. C., under a contract to be made with the Providence Hospital by the Surgeon-General of the Army. The amount of relief afforded under this appropriation was as follows:

| | |
|---|---:|
| Patients in hospital July 1, 1899 | 143 |
| Admitted during the year | 1, 349 |
| Total number treated | 1, 492 |
| Average number admitted per month | 124 |
| Number remaining in hospital June 30, 1900 | 135 |
| Total number of days' treatment afforded | 43, 560 |
| Average number of days' treatment per patient | 40 |
| Average number of patients treated per day | 111 |
| Longest term of treatment (days) | 365 |
| Shortest term of treatment (day) | 1 |
| Number of patients in hospital during the whole year | 24 |

## ARMY AND NAVY GENERAL HOSPITAL, HOT SPRINGS, ARK.

*Officers' division.*—Twenty-seven officers were under treatment during the calendar year 1899. Twenty-three were returned to duty, or to their homes, much improved, if on the retired list, after treatment extending over an average period of 64 days; 1 died, and 3 remained in hospital December 31, 1899.

*Enlisted men's division.*—One hundred and eighty cases were admitted during the year, which, with 48 remaining from 1898, make a total of 228 cases treated. One hundred and ten of these were returned to duty, 59 were discharged for disability, 15 by expiration of term of service or special orders, 2 died, and 42 remained under treatment December 31, 1899. Of those discharged on certificates of disability, 26 were cases of rheumatism and 11 of gunshot wounds.

*Division of ex-volunteers.*—Under regulations prescribed by the Surgeon-General of the Army, and approved by the Secretary of War, ex-volunteers of the war of the rebellion have been admitted to this hospital since May 10, 1897, and ex-volunteers of the Spanish-American war since November 9, 1898. During the year ending December 31, 1899, 175 permits were issued to ex-volunteers of both wars. One hundred and thirty cases availed themselves of this permission and were admitted for treatment. The remaining 45 permits were canceled, as the beneficiaries, for various reasons, could not take advantage of them. Most of those who were treated returned to their homes much benefited; 2 veterans of the civil war died in the hospital during the year; 16 cases remained under treatment December 31, 1899.

### THE ARMY MEDICAL MUSEUM AND LIBRARY BUILDING.

This building was originally erected by an appropriation which comprised only 50 per cent of that called for by the estimates. It was, therefore, materially curtailed, not only in its proportions but in its conveniences for the ends in view. The growth of the collections has now reached a point where there is some embarrassment in properly caring for them. This is felt particularly in the library. One large room originally designed for library purposes has been diverted to the uses of the Record and Pension Office of the War Department, and is entirely removed from the control of this office. It is much needed for the display and care of the originals and duplicates of the library property, the latter of which are now so crowded in basement rooms as to be practically inaccessible. I therefore renew the request that the whole of the Museum and Library Building be devoted to its legitimate purpose.

### ARMY MEDICAL MUSEUM.

The total number of specimens in the Army Medical Museum at the end of the fiscal year, June 30, 1900, was 35,420. The following statement shows in detail the additions and changes in the different sections:

| | |
|---|---|
| Pathological section: | |
| In Museum June 30, 1899 | 11,631 |
| Discarded | 17 |
| | 11,614 |
| Received during the year | 263 |
| In Museum June 30, 1900 | 11,877 |
| Anatomical section: | |
| In Museum June 30, 1899 | 1,529 |
| Discarded | 1 |
| | 1,528 |
| Received during the year | 12 |
| In Museum June 30, 1900 | 1,540 |

| | | |
|---|---|---|
| Section of comparative anatomy: | | |
| In Museum June 30, 1899 | | 1,432 |
| In Museum June 30, 1900 | | 1,432 |
| Microscopical section: | | |
| In Museum June 30, 1899 | | 12,750 |
| Added during the year | | 141 |
| In Museum June 30, 1900 | | 12,891 |
| Miscellaneous section: | | |
| In museum June 30, 1899 | | 2,427 |
| Discarded | | 1 |
| | | 2,426 |
| Received during the year | | 68 |
| In museum June 30, 1900 | | 2,494 |
| Provisional pathological section: | | |
| In museum June 30, 1899 | | 2,063 |
| Discarded | 1 | |
| Returned to contributor | 1 | |
| Transferred to other institutions | 3 | |
| | | 5 |
| In museum June 30, 1900 | | 2,058 |
| Provisional anatomical section: | | |
| In museum June 30, 1899 | | 895 |
| Transferred to other institutions | | 139 |
| In museum June 30, 1900 | | 756 |
| Photographic series: | | |
| In museum June 30, 1899 | | 2,312 |
| Received during the year | | 60 |
| In museum June 30, 1900 | | 2,372 |

### RECAPITULATION.

| | |
|---|---|
| Specimens in the museum June 30, 1899 | 35,039 |
| Discarded, transferred, etc | 163 |
| | 34,876 |
| Added during the year | 544 |
| Specimens in museum June 30, 1900 | 35,420 |

The following are some of the more interesting specimens added to the museum collection during the past fiscal year:

11727. Typhoid ulceration of ileum with perforation and peritonitis; from a soldier. Contributed by Acting Asst. Surg. J. J. Curry, U. S. A.

11855–11873. Series of 17 specimens of typhoid fever, and 2 of amœbic dysentery; from soldiers at Fort McPherson, Ga., during Spanish-American War. From post-mortem examinations made by Acting Asst. Surg. R. Norton, U. S. A. One of the fever specimens shows healing, 5 show perforations, 1 was complicated with ulceration of larynx, 1 with parotitis, and 1 with malaria.

11852. Head of an infant showing pseudencephalus. Contributed by Dr. V. B. Jackson, Washington, D. C.

11844–11846. Solitary tubercle of brain of child 9 years old, which had had epileptic fits and died in convulsions. The suprarenal capsules were also tubercular. Contributed by Dr. G. N. Acker, Washington, D. C.

11935–11936. Sarcoma of cerebellum and lung, and tuberculosis of lung, from a woman aged 50, who had also a cancerous breast removed. These conditions were all verified by microscopical examination. Contributed by Dr. D. S. Lamb, Washington, D. C.

11945. Skullcap of boy 5 years old, showing healing after trephining for traumatic epilepsey, which was thereby relieved. The boy was afterwards accidentally killed. Contributed by Acting Asst. Surg. James S. Kennedy, U. S. A.

11726. Aneurism of abdominal aorta which ulcerated and perforated into duodenum; from a soldier who died suddenly. The case was complicated with a malarial spleen, chronic interstitial nephritis, tubercular mesenteric glands, and general arterio-sclerosis. Contributed by Acting Asst. Surg. J. J. Curry, U. S. A.

11812–11813. Aneurism of popliteal artery; femoral artery tied; failure of collateral circulation; gangrene of foot and lower leg, requiring amputation. The colors in the grangenous limb have been beautifully preserved by the Kaiserling method. From an old soldier. Contributed by Maj. L. A. La Garde, surgeon, U. S. A.

11982. Aneurism of arch of aorta which ruptured and caused sudden death. A large pouch opening by a small aperture into the arch. From a soldier. Contributed by Capt. E. A. Mearns, assistant surgeon, U. S. A.

11920–11921. Acute tuberculosis of pericardium and spleen, from a man aged 32. Contributed by Dr. D. S. Lamb, Washington, D. C.

11877–11878. Acute vegetative endocarditis, with chronic pericarditis, and large embolic infarctions of spleen and kidneys; from a woman aged 26. There was a history of rheumatism. Contributed by Dr. D. S. Lamb.

11849–11850. Vegetative endocarditis of both sides, with large embolic infarction of the spleen. From a woman aged 26, who had suffered from rheumatism. Contributed by Dr. H. M. Newman, Washington, D. C.

11853. Cancer of larynx. Contributed by Dr. T. C. Smith, Washington, D. C.

11919. Cancer of œsophagus. Contributed by Dr. W. W. Johnston, Washington, D. C.

11834. Mesenteric hernia, which became strangulated and caused death in a man aged 24. Contributed by Dr. D. S. Lamb, Washington, D. C.

11883–11886. Large retroperitoneal tumor, conjoined with strangulated internal abdominal hernia, which caused death in a man aged 45. Contributed by Dr. D. S. Lamb, Washington, D. C.

11814. Amœbic abscess of the liver. Contributed by Dr. G. N. Acker, Washington, D. C.

11924. Gas bacillus dilatation of hepatic vessels; from a woman. Contributed by Acting Asst. Surg. James Carroll, U. S. A.

11937. Atrophy of kidneys with dilatation; right ureter nearly impervious; bladder contracted and ulcerated; prostatic portion of urethra ulcerated; from a soldier who had had cystitis and died of peritonitis. Contributed by Dr. Robert Pillow.

11933. Kidney showing atrophy and dilatation apparently caused by ureteral calculus. Removed by operation from a woman aged 38. Recovery. Contributed by Dr. J. W. Bovee, Washington, D. C.

11984. Kidneys showing hemorrhages into cortex; from a soldier who had gonorrhea. Contributed by Maj. W. C. Borden, surgeon, U. S. A.

11935. Chronic hemorrhagic inflammation of kidney; from a man aged 70. Contributed by Dr. D. S. Lamb, Washington, D. C.

11983. Calculi removed by operation from the kidney of a soldier. Contributed by First Lieut. J. H. Ford, assistant surgeon, U. S. A.

11728. Calculus weighing 190 grains removed from the bladder of a boy aged 5 years. Superpubic cystotomy. Recovery. Contributed by Dr. J. Ford Thompson, Washington, D. C.

11882. Fungoid growth of penis from chronic inflammation; amputation. Recovery. From a soldier aged 26 who had had chancroid and phymosis. Contributed by Acting Asst. Surg. W. T. Baird, U. S. A.

11836. Testicle, weighing 32 ounces and measuring 7.5 by 4 by 3.5 inches, of a horse 10 years old; removed for cancer. Recovery. Contributed by D. E. Buckingham, veterinary surgeon, Washington, D. C.

11941. Large cyst of Fallopian tube. Removed by the contributor, Dr. J. W. Bovee, Washington, D. C.

11874. Ankylostomum duodenale. From one of a series of cases observed in Porto Rico by the contributor, First Lieut. B. K. Ashford, assistant surgeon, U. S. A.

11725. The bones of a case of mycetoma of leg and foot; showing cavities filled with actinomyces. Contributed by Acting Asst. Surg. J. T. Arwine, U. S. A.

11745–11774 and 11903–11913. Series of 41 models showing the rarer forms of disease of the skin. Made and colored by Dr. J. Baretta, of the St. Louis Hospital, Paris. Purchased.

11946. Odontoma, weighing 3 pounds, from a 9-year-old horse whose jaw had been broken in early life. The tumor developed as a consequence. Purchased.

11947–11952. Artificial dentures carved of hippopotamus tusk and ivory in Paris previous to 1854. Contributed by Dr. James Gordon, St. Thomas, Danish West Indies.

11956–11960. Old-fashioned artificial dentures of ivory. Contributed by Dr. A. E. N. Lister, Lincoln, England.

11969–11970. Peculiar bridge work made by a Mohammedan goldsmith in the East Indies. The teeth are stained from chewing betel nut. Contributed by Dr. J. W. Egbert, Madras, India.

11980–11981. Plaster casts of dentures of Crow and Cheyenne Indians, showing entire absence of disease, which the contributor attributes to a purely meat diet. Contributed by Dr. W. A. Allen, Billings, Mont.

11739. Ivory denture made at Toronto, Canada, about one hundred years ago. Contributed by Dr. W. A. Campbell, Brooklyn, N. Y.

11794. Ivory dentures made in 1849 by Dr. Theo. Chupein, now of Philadelphia, Pa.

11818–11821. Plaster casts of dentures to illustrate the mechanism of retracting and retaining the side teeth. Contributed by E. S. Fuller, Piqua, Ohio.

11824–11829. Japanese artificial dentures made of wood; some with white stones to represent teeth; the stones are blackened when a woman is married. The molar region shows rows of nail heads. Contributed by Dr. A. G. Smith, Yokohama, Japan.

11876, 11890, 11894, and 11895. Plaster casts of dentures to show shape of hard palate in mouth breathing. Contributed by Dr. M. C. Smith, Lynn, Mass.

11897. Plaster casts of dentures showing destruction of palate and alveolar arches by lupus. Contributed by Dr. M. C. Smith, Lynn, Mass.

11808. Bird shot embedded for twenty years in the neck of a tooth. Contributed by Dr. E. E. Slaton, Eclectic, Ala.

## LIBRARY OF THE SURGEON-GENERAL'S OFFICE.

The following table shows the additions made to the library during the fiscal year 1899–1900:

| Description. | On hand June 30, 1899. | Added during fiscal year. | Total June 30 1900. |
|---|---|---|---|
| | *Volumes.* | *Volumes.* | *Volumes.* |
| Medical journals | 39,094 | 1,324 | 40,418 |
| Medical transactions | 6,153 | 139 | 6,292 |
| Bound theses | 1,989 | 65 | 2,054 |
| Bound pamphlets | 2,670 | 84 | 2,754 |
| Other medical books | 81,966 | 2,411 | 84,377 |
| Total | 131,872 | 4,023 | 135,895 |
| Medical theses | [1]61,120 | 1,846 | 62,966 |
| Medical pamphlets | 61,775 | 5,250 | 67,025 |
| Total | 122,895 | 7,096 | 129,991 |

[1] Of the total number of theses on hand June 30, 1899, there were 828 bound in 65 volumes, and 646 pamphlets bound in 53 volumes during the year.

There were presented to the library during the year 557 books and 8,740 pamphlets and journals.

Volume V, second series, of the Index Catalogue, includes the letters "E" and "F" from "Enamel" to "Fyuner," and forms a volume of 1,127 pages. It will be ready for distribution at the usual time. The appropriation for Volume VI, second series, having been made, the manuscript is in course of preparation for the printer.

## MEDICAL OFFICERS.

### UNITED STATES ARMY.

An army medical board convened by Special Orders, No. 15, Adjutant-General's Office, January 18, 1900, at Manila, P. I., approved 16 candidates, 1 of whom died before the report of the board was received.

Another board convened by Special Orders, No. 81, Adjutant-General's Office, April 6, 1900, at Havana, Cuba, examined 15 candidates during its session from May 1 to 28, 1900; 4 of these were approved, 10 were rejected as disqualified professionally, and 1 withdrew after partial examination.

*Appointments.*—None during the year.

*Promotions.*—One deputy surgeon-general with the rank of lieutenant-colonel to be assistant surgeon-general with the rank of colonel; 3 surgeons with the rank of major to be deputy surgeons-general with the rank of lieutenant-colonel; 5 assistant surgeons with the rank of captain to be surgeons with the rank of major.

*Vacancies.*—Twelve.

*Deaths.*—One surgeon with the rank of major; 1 assistant surgeon with the rank of captain (chief surgeon United States Volunteers with the rank of major); 1 assistant surgeon with the rank of first lieutenant.

*Retirements.*—One assistant surgeon-general with the rank of colonel; 2 deputy surgeons-general with the rank of lieutenant-colonel; 1 surgeon with the rank of major; 1 assistant surgeon with the rank of captain, retired with the rank of major.

*Wholly retired.*—One assistant surgeon with the rank of captain.

*Resigned.*—One assistant surgeon with the rank of captain.

*Dropped from the Medical Department United States Army, having failed to accept commission.*—One assistant surgeon with the rank of first lieutenant.

The Medical Department consists at present of 192 officers, a number which barely sufficed for the needs of the Army before the outbreak of the late war with Spain, and which proved utterly inadequate in number, notwithstanding the earnest efforts of its members to form a satisfactory basis of organization, for the large increase made to our military forces during the progress of that war. Similarly since the close of the war it has been impossible for the Medical Department, without professional assistance from civil life, to provide for the sanitary and medical work at the large number of new posts and stations that have been established at home for coast defense, in Cuba, Porto Rico, and Hawaii for garrison duty, and for the military operations in the Philippine Islands.

Excellent assistance has been obtained by contract with civil physicians, so far as concerns the professional care of the sick and wounded, but much experience is required to fit these medical men for the sanitary work of their position and to familiarize them with army methods. Most of them are young men with no knowledge of military hygiene or medical administration. They accept contracts for a year to see the world or gain professional experience, but not with a view to become expert military sanitarians. They are therefore not qualified to perform successfully many of the duties incumbent upon them. To be an efficient army medical officer, one should be able not only to prescribe for the sick and perform surgical operations, but to point out and remedy all causes tending to produce disease, and to inculcate the spirit of military discipline without which army nurses and attendants are useless. This can not be expected from young civilian physicians whose service in the Army is casual and temporary. On the other hand, the young man who desires to be permanently attached to the medical service of the Army devotes his whole energies to perfect himself for the work of his life. A lieutenant and assistant surgeon of the Regular Army has therefore, as a rule, much higher qualifications than the young physician under contract. The desirability of a large increase in our regular medical establishment is obvious. It has been heretofore recommended by me and I trust that favorable action will soon be taken by Congress in this important matter.

In the following letter, dated November 29, 1899, I called attention to the insufficiency of the Medical Department and urged legislation to increase its efficiency by adding to its numbers and providing a probationary period during which candidates for appointment, selected by an examining board in accordance with existing regulations, should be required to undergo a course of instruction to fit them for their duties as army medical officers:

[Subject: Bill for an increase in the Medical Corps of the Army.]

War Department, Surgeon-General's Office,
*Washington, November 29, 1899.*

Sir: I have the honor to transmit herewith a bill for the increase of the Medical Department of the Army. This increase is very urgently needed, and the number of additional medical officers asked for is very reasonable in view of the greatly increased demands upon the Medical Department during the past two years. The Medical Corps of the Army at present consists of 192 commissioned medical officers, but the requirements of the service are such that at the present time there are over 400 physicians in service as acting assistant surgeons under contracts made with the Surgeon-General of the Army. The number of medical officers was insufficient for our Army of 25,000 men on a peace basis prior to the Spanish-American war. At the present time a large number of posts have been established upon the seaboard of the United States, in Porto Rico, in Alaska, and the Hawaiian Islands, which, presumably, will be permanently garrisoned hereafter. There are at present garrisons at 18 new posts (upon the seaboard) in the Department of the East alone, and in the Department of the Columbia, including Alaskan posts, there are 10. The number of independent garrisons in Porto Rico at present is 11; the number of independent commands in Cuba is 30. At the present time there are stationed in the Philippine Islands, or under orders to report for duty to the commanding general, Department of the Pacific, 52 medical officers of the Regular Army, 23 surgeons of volunteers, 75 regimental surgeons and assistant surgeons of volunteer regiments, and 157 acting assistant surgeons. How many medical officers may be required for duty with troops constituting the permanent garrisons of these islands it is impossible to say at the present time; but there can be no doubt that if the number of medical officers of the Army called for in this bill is authorized by Congress it will still be necessary, for many years to come, to employ a considerable number of contract surgeons to meet the requirements of the service.

It is important in the interests of the service that the Medical Department should have a sufficient number of commissioned officers who have been carefully examined as to their physical and professional qualifications for the service, and who, as the result of special training received in the service, have become familiar with their duties and responsibilities, not only as physicians and surgeons, but as medical officers of the Army. It is also just and proper that those acting assistant surgeons and commissioned medical officers of volunteer regiments who have done good service and have the necessary qualifications, should have the way opened to them to obtain commissions; and it is evident that those who would be the most desirable acquisitions to the service can not afford to remain indefinitely under a contract which may be terminated at any moment, and which affords no prospect of advancement.

In view of the facts stated, I respectfully urge the importance of an increase of the Medical Department of the Army, as provided in the inclosed bill, at the earliest practicable date.

Very respectfully,

Geo. M. Sternberg,
*Surgeon-General, United States Army.*

The Secretary of War.

### BILL for the increase of the Medical Department of the Army.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there shall be added to the number of medical officers of the Army now authorized by law, four assistant surgeons-general with the rank of colonel; ten deputy surgeons-general with the rank of lieutenant-colonel; thirty surgeons with the rank of major; and eighty assistant surgeons with the rank of first lieutenant, who shall have the rank of captain at the expiration of five years' service, as now provided by law: *Provided,* That the original vacancies created by this act in the grade of colonel, lieutenant-colonel, and major shall be filled by seniority promotion in accordance with established laws and regulations.

SEC. 2. Hereafter, candidates for appointment in the Medical Corps of the Army who pass a medical examining board in compliance with existing regulations shall be appointed acting assistant surgeons for a probationary period of six months. During this probationary period they shall attend the Army Medical School established at the Army Medical Museum in the city of Washington, and the faculty of the Army medical school shall report to the Secretary of War at the end of the prescribed course of instruction upon the fitness and relative standing of the probationary candidates; those who are recommended by the faculty may then be commissioned by the President to fill existing vacancies in the Medical Corps of the Army.

SEC. 3. Acting assistant surgeons appointed in accordance with the provisions of section two shall be paid one hundred dollars per month, and shall not be entitled to any allowances or to mileage in reporting for the prescribed course of instruction, or in returning to their homes if they are not recommended for a commission.

SEC. 4. The number of acting assistant surgeons appointed in accordance with the provisions of section two shall not exceed the number of vacancies existing or to result from retirements during the probationary period.

SEC. 5. Candidates who have rendered satisfactory service as acting assistant surgeons, or as commissioned medical officers in the Volunteer Army of the United States for a period of six months or more, shall be exempted from this period of probation and may be commissioned at once if vacancies exist and they pass a satisfactory examination as to their physical, moral, and professional qualifications.

This bill is intended to provide only for an increase in the Medical Corps absolutely necessary for the medical care of the regular troops now in service. If the Army should be increased to 100,000 enlisted strength, a corresponding increase in the Medical Corps would be required, and I have submitted to the honorable the Secretary of War the draft of a bill providing for a suitable medical corps for an army of that size under existing conditions.

## UNITED STATES VOLUNTEERS.

During the year 9 appointments have been made as surgeons, United States Volunteers, with the rank of major; 7 of the appointees were from the Regular Army and 2 were acting assistant surgeons, United States Army.

*Died.*—One chief surgeon with rank of major and 1 surgeon with the rank of major.

At the end of the year there remained in service 34 surgeons with the rank of major, 11 of whom were captains in the regular establishment.

## REGIMENTAL SURGEONS AND ASSISTANT SURGEONS, UNITED STATES VOLUNTEERS.

On June 30, 1900, there were 78 regimental surgeons and assistant surgeons in the service—25 majors, 13 of whom were captains in the Regular Army; 27 assistant surgeons with the rank of captain, and 26 assistant surgeons with the rank of first lieutenant.

*Deaths.*—One lieutenant and assistant surgeon.

These regimental medical officers were appointed in accordance with the provisions of the act of Congress approved March 2, 1899 (an act for increasing the efficiency of the Army and for other purposes). (Chap. 352, Statutes at Large, vol. 30.) Three medical officers were commissioned for each volunteer regiment, one with the rank of major, one with the rank of captain, and one with the rank of first lieutenant. It was the evident intention of Congress that these medical officers should have the pay of the rank respectively held by them, but by a decision of the Comptroller of the Treasury the medical officer commissioned by the President as a captain can receive only the pay of a first lieutenant, and the Paymaster's Department of the Army has necessarily been ruled by this decision. The medical officers who accepted these positions had seen previous service in the war with Spain. Some of them had been brigade surgeons and others regimental surgeons with the rank of major. When they were offered commissions as assistant surgeons with the rank of captain there was no reason to suppose that they would not be paid as captains. I therefore recommend Congressional action to insure to these officers the pay of a "captain, mounted," from the date of their acceptance of such commissions.

### ACTING ASSISTANT SURGEONS, UNITED STATES ARMY.

There were in service June 30, 1899, 389 acting assistant surgeons. During the year ended June 30, 1900, contracts were made with 434 physicians, while 358 contracts were annulled and 3 terminated by death, leaving in service June 30, 1900, 462 under contract. Of this number 121 were on duty in the United States, 22 on transports, 10 in Porto Rico, 60 in Cuba, and 249 in the Philippine Islands.

The following tabulation shows the number of contracts with physicians made and annulled from April 17, 1898, to June 30, 1900:

| | Out of service. | In service. | Total. |
|---|---|---|---|
| Served under 1 month | 34 | 15 | 49 |
| Served 1 to 6 months | 339 | 87 | 426 |
| Served 6 to 12 months | 144 | 73 | 217 |
| Served 1 to 2 years | 78 | 250 | 328 |
| Served over 2 years | 1 | 37 | 38 |
| Total | 596 | 462 | 1,058 |

| | |
|---|---|
| Total number serving in 1898-99 | 855 |
| Daily average serving in 1898-99 | 439 |
| Total serving in 1899-1900 | 618 |
| Daily average serving in 1899-1900 | 415 |

Average service of 596 now out of service, five months and twenty-six days.
Average service of 462 now in service, one year and three months.
Average service of 1,058 acting assistant surgeons, nine months and twenty-six days.

All the contract surgeons now in service have been examined by boards of medical officers constituted by me to determine their fitness, physical and professional, for the discharge of their duties. The above tabulation shows, however, that a sufficient inducement is not held out to retain these medical men in service. Out of a total of 1,058 under contract since April 18, 1898, 373 served only six months or less. This is a serious loss to the Department, as it takes about that length of time to familiarize the civilian surgeon with the duties of his new sphere of action. As an inducement for these contract surgeons to remain in service, and as a reward for those who have continued in service for a year or more, I recommend that the commission of assistant surgeon of volunteers be granted them, as provided in a bill which I submitted on April 4, 1900, as follows:

A BILL for the appointment of assistant surgeons of volunteers.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That "contract surgeons" who have rendered faithful and satisfactory service with the Army of the United States for a period of one year, and who have passed a satisfactory examination as to their physical and professional qualifications, shall be commissioned by the President as assistant surgeons of volunteers, with the rank of first lieutenant, subject to honorable discharge from the service whenever their services are no longer required.

SEC. 2. That at the end of two years' service as first lieutenants assistant surgeons of volunteers, appointed in accordance with section one of this act, who have rendered faithful and satisfactory service, shall be commissioned by the President as assistant surgeons of volunteers, with the rank of captain, subject to honorable discharge from the service whenever their services are no longer required; and that they shall receive the pay of a captain mounted.

### ARMY MEDICAL SCHOOL.

This school was closed during the school year 1899–1900, as existing conditions in the Medical Department rendered it impracticable to carry out the usual school programme.

### BOARDS FOR THE STUDY OF TROPICAL DISEASES.

On my recommendation a board of medical officers, consisting of First Lieut. Jere B. Clayton, assistant surgeon, United States Army; First Lieut. Richard P. Strong, assistant surgeon, United States Army, and Acting Asst. Surg. Joseph J. Curry, was appointed to meet at one of the general hospitals in or near Manila, P. I., to be designated by the commanding general, Department of the Pacific, upon the recommendation of the chief surgeon of the department, for the purpose of studying tropical diseases as they occur in those islands. It was my desire that this board should be given all the appliances and assistance necessary for conducting their researches and every opportunity for obtaining access to cases and making autopsies, etc. In my letter of instruction to the chief surgeon I stated that the members of the board need not necessarily work in the same laboratory, and while pursuing their general investigations they could make blood examinations and bacteriological researches for the purpose of clinical diagnosis as well as with a view to the promotion of our knowledge of infectious diseases prevailing in the Philippines. I stated that if stationed at different hospitals the members of the board should meet occasionally for consultation.

Each member should make an independent report of investigations conducted by him and of the general result of his blood examinations, etc. A quarterly report of progress should be made by each member of the board, which should indicate the nature of the work in which he has been engaged and the results attained. Full and detailed reports relating to particular diseases investigated will be made by the individual members of the board whenever they are prepared to submit such reports.

Special attention should be given to tropical dysentery, to the malarial fevers prevailing in the Philippines, to beri-beri, to intestinal parasites, and in general to all tropical diseases the etiology of which has not been completely worked out.

Some excellent work was done by the members of this board and their associates in the laboratories of the large hospitals. See, for instance, infra page 755, under the heading of "Dysentery."

Another board was appointed to meet at Camp Columbia, Quemados, Cuba, in May, 1900, for the purpose of pursuing scientific investigations with reference to the infectious diseases prevailing in the island of Cuba. This board consisted of Maj. Walter Reed, surgeon, United States Army, and Acting Asst. Surgs. James Carroll, Aristides Agramonte, and Jesse W. Lazear, United States Army.

The instructions to Major Reed, president of this board, included the following:

> You will naturally give special attention to questions relating to the etiology and prevention of yellow fever. As you are familiar with what has already been done by other bacteriologists in this field of investigation, I do not consider it necessary to give you any suggestions or detailed instructions. But it is evident that the most important question which will occupy your attention is that which relates to the etiology of this disease.
>
> You will also take advantage of such opportunities as may offer for the study of other infectious diseases, and especially of the malarial fevers prevailing in the island of Cuba. An important question in connection with the diseases of tropical and semitropical countries relates to the etiology of febrile attacks of short duration, to which strangers are especially subject. Should you have time, there will be ample opportunity for the study of leprosy in the leper's hospital in the city of Havana. Attention should also be given to the infectious diseases of the lower animals, in case any such prevail, the etiology of which has not been definitely determined.
>
> You are authorized to obtain from the medical supply depot in Havana such articles as you may require, upon requisitions approved by the chief surgeon, Division of Cuba. Necessary articles not on hand in that depot should be called for upon special requisitions to be sent to this office.

It is with regret that I have to report the death of one of the members of this board while in the discharge of his duty under the above instructions. Acting Asst. Surg. Jesse W. Lazear died of yellow fever September 25, 1900, at Columbia Barracks, Quemados, Cuba. Acting Asst. Surg. James Carroll, another member of this board, suffered from a severe attack of the disease, but fortunately recovered.

## THE HOSPITAL CORPS.

At the close of the fiscal year ending June 30, 1899, the Hospital Corps consisted of 189 hospital stewards, 287 acting hospital stewards, and 2,892 privates, a total of 3,368. During the fiscal year ending June 30, 1900, the gain to the corps was 2,272 men, of whom 1,490 were obtained by the enlistment of civilians, 282 by reenlistment, and 500 by transfer from the line. The corps lost during the same period 1,549 men, the greater part of them by discharge. It is worthy of note that 88 were discharged on certificates of disability, 2 were killed in action, 1 was reported missing, and 27 died of disease. The number of Hospital Corps men in service June 30, 1900, was 167 hospital stewards, 381 acting hospital stewards, and 3,543 privates, a total of 4,091.

*Hospital stewards.*—The number of hospital stewards decreased during the fiscal year from 189 to 167, it being impossible to fill vacancies as they occurred, inasmuch as the number of hospital stewards considerably exceeded the allowance of 100, which was the number authorized before the war with Spain, the increase in this grade authorized in 1898 having been for the war only. However, by the act of Congress approved May 26, 1900 (published in General Orders, No. 76, Headquarters of the Army, June 1, 1900), 100 additional hospital stewards were allowed. An examination is about to be held to fill the vacancies thus created.

*Acting hospital stewards.*—Owing to the wording of section 7 of the act of Congress approved March 1, 1887, which established the Hospital Corps, the status of the acting hospital steward has been uncertain. He was, in point of fact, a noncommissioned officer. The wording of the law appeared to provide that the acting steward should be a private temporarily detailed rather than a true noncommissioned officer. The rulings of the accounting officers of the Treasury in regard to this matter in individual cases have varied, but the question having now come up with especial prominence, in view of the fact that several acting hospital stewards have been placed upon the retired list, a general decision was rendered for the first time by the Comptroller of the Treasury on April 16, 1900 (published in Circular No. 231 of Paymaster-General's Office, April 19, 1900), in which it was decided that an acting hospital steward is a true noncommissioned officer, and is entitled to travel pay and extra pay as such, and not as a private, and when retired is entitled to 75 per cent of the pay and allowances of his grade.

In the volunteer regiments organized during the year 1899, hospital stewards (three in number for each regiment) were noncommissioned officers of the regiment, and the regulations prescribed for the organization of these regiments directed that candidates for appointment as hospital stewards should be required to produce certificates of efficiency from a reputable college of pharmacy. Experience in the summer of 1898 having shown, however, the great necessity that there should be a noncommissioned officer of the Medical Department with each regiment, who should be familiar with the preparation of reports and returns, in order that the proper medical statistics should be kept and that the enlisted men of the Hospital Corps should be properly accounted for, it was informally arranged that one of the volunteer stewards for each regiment should be secured by the appointment of an acting hospital steward of the Regular Army to that position. Experienced and capable acting hospital stewards were accordingly appointed to these positions upon my recommendation. The benefits of this course have been apparent from the orderly manner in which the records of the Medical Department in the volunteer service have been kept.

*Schools of instruction.*—The schools of instruction at Washington Barracks, D. C., and Angel Island, Cal., have been continued during the fiscal year, 726 men having been instructed at Washington Barracks and 692 at Angel Island. The greater part of these men have been sent to the Philippines. A school of instruction has also been established at hospital No. 3, Manila, P. I., and until the military hospital No. 1, Havana, Cuba, was given up, a training school was in successful operation at that hospital.

A large number of hospital corps men of all grades have been commended by surgeons with whom they were serving. Of many of these mention is made in the reports embodied in this volume. The chief surgeon, Department of the Visayas, reports that he never knew of a hospital corps man who failed in his duty in any way under fire. An experience with the most formidable diseases, such as yellow fever and the bubonic plague, has also shown that the men of the Hospital Corps are always ready to expose themselves with cheerfulness to dangers which are rightly more dreaded than those of the battlefield. Where so many have done well it would appear invidious to make distinctions, and doubtless many acts of heroism have never been reported to me. An amputation performed by Privates Samuel Jones and Henry Becker,[1] of the Hospital Corps, is, however, particularly worthy of note as an evidence of courageous and judicious performance of duty in an emergency, for which they had received no special training. On January 27, 1900, a certificate of merit was awarded to Private Philip M. Beyerl, Hospital Corps. On November 13, 1899, while on duty on the hospital ship *Relief*, an insane patient having eluded his attendant and jumped overboard, Private Beyerl sprang after him without a moment's hesitation, and, although the night was dark and the bay rough, succeeded in reaching the patient and supported him until a boat came to his assistance. A certificate of merit was also awarded on June 14, 1899, to Private Harry Shields, Hospital Corps, for distinguished conduct in the flood at Brackettsville, Tex. General Orders, No. 15, Adjutant-General's Office, February 13, 1900, publishes the name of one hospital steward and six privates of the Hospital Corps, whose conduct was especially meritorious in voluntarily nursing yellow-fever patients at Fort Barrancas, Fla., during the epidemic which prevailed at that post in November, 1897.

## ARMY NURSE CORPS.

The number of female nurses in the Army Nurse Corps has remained approximately constant during the year, there having been 187 in the service July 1, 1899, and 210 on June 30, 1900; 165 contracts were made and 149 were annulled. The movement of troops to the Philippines has occasioned a corresponding movement of nurses, and 122 are there now, against 33 at the beginning of the year. Female nurses have recently left Honolulu and the hospital ship *Relief*, but are serving in increasing numbers on the army transports in the Pacific.

The number of nurses in the United States was temporarily increased in the autumn of 1899, but otherwise remained nearly the same, having been 65 a year ago and 60 at present. They are now stationed at the general hospitals at the Presidio of San Francisco, Cal., and Fort Bayard, N. Mex., at two post hospitals, and at the school of instruction for the Hospital Corps at Angel Island. No nurses remain in Porto Rico at present, and their number in Cuba has been reduced from 76 to 16.

The organization of the Army Nurse Corps has been steadily improved and its adjustment to the Army made more satisfactory in details. The work of the nurses continues to be highly appreciated and their services are in demand at almost all hospitals of importance.

The regulations governing the Army Nurse Corps which were published in a circular from this office June 20, 1899, approved by the Secretary of War, were reissued March, 9, 1900, with but two important changes. Appointments are now limited to citizens of the United States, this provision being waived only in the cases of those who have previously served (and then only if they have legally declared intention of becoming citizens). The leave of absence authorized, which was previously in the proportion of thirty days for each year of past service, is now thirty days in each calendar year, regardless of length of service.

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[1] Report of the chief surgeon, Department of the Visayas, p. 670.

The use of the nurses at the hospital corps schools as instructors in the preparation of food for the sick continues as reported last year, and has been most successful. The nurse at Angel Island is under contract as one of the Army Nurse Corps, but the nurse at Washington Barracks, is for local reasons, now classed as a civilian employee.

There has been no death among the nurses in service during the year.

## MEDICAL AND HOSPITAL SUPPLIES.

Military emergencies, which have controlled the medical supply of the Army for several years, continue to influence the operations of the department having it in charge. Sudden and unforeseen demands, such as those made by the relief force recently sent to China, necessarily disturb the most liberal provision for known conditions, and compel the consideration of an ample margin of safety. Happily, in this instance the medical supply in Manila was sufficient, not only to provide for the troops immediately employed, but to meet the estimated wants of an increased force for a considerable period. Such contingencies, and the evident propriety of maintaining a large medical supply on the Pacific coast, have led to the enlargement, now in progress, of the medical supply depot at San Francisco, so that it may contain supplies for 100,000 men for six months. With a corresponding provision in New York, and the holding at St. Louis of supplies sufficient for 20,000 men for the same period, great capacity for issue will be insured, whether for emergency or routine supply.

New York is, and will probably continue to be, our cheapest purchasing market, and that most available for the distribution of supplies, so that it has been my aim to free the supply depot at that place as far as possible from the interruption of minor issues to posts at home, and enlarge its ability to meet calls from abroad. To this end its home territory has been restricted to the posts on Lake Ontario and the Atlantic seaboard. The number of posts, including arsenals, in this area is 52. In this way this depot has been free to deal with issues to Cuba, Porto Rico, and the larger part of the very extensive supply needed in the Philippines.

A like restriction of the near work of the San Francisco depot to the 20 posts in the departments of the Columbia and California has enabled that depot to deal satisfactorily with the issues to Alaska and the Sandwich Islands, as well as to contribute largely and quickly to an unexpected demand, such as that of the China relief expedition, and to restore withdrawals from Manila. As above noted, it is my desire to enlarge the capacity of this depot in order to give greater security in meeting emergency demands.

This narrowing of the territory of the depots at New York and San Francisco has greatly enlarged the area of supply for the depot in St. Louis, so that it now has 52 dependent posts distributed through the country from the Canadian to the Mexican border and the Gulf of Mexico, and from the Alleghenies to the Rocky Mountains. It is considered that this control of supply will prove satisfactory.

The diminution of the forces in Cuba and Porto Rico has enabled me to close several of the minor depots in those islands, so that only two remain in active operation—one of large storage in Havana and a small supply in San Juan.

The unusual military conditions existing in the Philippine Islands, the multiplication of posts and garrisons, the demands connected with an impoverished and unsanitary people, and the unfamiliarity with military restrictions and proper responsibility for public property of many of the medical officers temporarily employed have resulted in large requisitions for medical supplies from that quarter, so that it is not yet possible to determine with strict accuracy what constitutes a normal provision for troops stationed in the Philippine Islands.

It has been my practice to allow the largest possible measure of independence to medical authorities in remote spheres of action, holding them to proper accountability; but in the execution of my responsibility I have made some few reductions in the large requests from Manila. With rare exceptions the supplies asked for have been sent as rapidly as the conditions of the market, due security of inspection, and opportunity for transportation would permit. At the same time the medical supply officer at Manila has been provided with ample funds and has been authorized to purchase, in the local market, any supplies urgently needed.

The enormous quantities of standard articles of supply which have been sent to the Philippines or purchased in Manila since January 1, 1900, will be appreciated by reference to the following list, which contains a few only of the articles furnished:

| | | |
|---|---|---|
| Bismuth, subnitrate (3 tons) | pounds.. | 6,250 |
| Cathartic pills, compound | number.. | 2,900,000 |
| Castor oil | quarts.. | 12,471 |
| Chloroform, in 100-gram bottles | bottles.. | 16,465 |
| Ether, in 100-gram tins | tins.. | 15,000 |
| Petrolatum spissum (16 tons) | pounds.. | 31,930 |
| Quinine tablets | tablets.. | 23,750,000 |
| Plaster, adhesive, 30 centimeters wide | meters.. | 15,500 |
| Bandages, roller | number.. | 1,680,000 |
| Gauze, plain | yards.. | 270,000 |
| Beef extract, in 100-gram tins | tins.. | 41,200 |
| Alcohol | quarts.. | 39,750 |
| Brandy | do.... | 22,000 |
| Whisky | do.... | 16,000 |
| Envelopes, official, large | number.. | 115,000 |
| Envelopes, official, letter | do.... | 350,000 |
| Envelopes, official, note | do.... | 200,000 |
| Pens | do.... | 294,000 |
| Clinical thermometers | do.... | 18,067 |
| Towels, hand | do.... | 84,000 |
| Pajamas, suits | do.... | 28,336 |

This list might be extended, but my desire is simply to indicate the very large supply that is required for the present unusual service conditions, and to make plain the need for continuous effort to avoid an embarrassing deficiency.

In the matter of hospital stores I have felt called upon to exercise some restraint. The quantities asked for in the Philippines have been very large, and in view of the authorized allowance of 40 cents a day for the food of sick soldiers and the readiness of the Subsistence Department to furnish these supplies for sale, I have held that they can not be properly purchased by the Medical Department except for emergencies. I was and am still apprehensive that if these hospital stores are issued freely the light diet of the sick will habitually depend upon this emergency provision and not upon the allowance made by Congress.

A new table of medical supply is contained in the revision of the Manual for the Medical Department, now issuing from the press, and it is expected that the changes made, chiefly in the addition of approved medicines, appliances, and material, as well as in an increased allowance, will result in meeting every reasonable demand and in avoiding irregular issues aside from those of emergency.

To our already extensive field equipment there has been added a very compact chest intended for the use of detachments serving in the field or independently elsewhere. The supply is calculated for a battalion and a period of six months. Three hundred and eighty-eight of these chests have been sent to the Philippines and are probably in service. Their cost is $114.81 each, including a compact operating case. The chests, five in each set, of the model of 1898 continue in service, and of these there are approximately 130 sets, also in the Philippines. The cost of each set is $477.61.

It is believed that our hospital equipment is fully abreast of every military necessity and compares favorably with that of other nations. Special requests for remedies, instruments, and apparatus are favorably considered if there is evidence that they will be helpfully employed.

The boards convened in Havana and Manila for the investigation of tropical diseases have been liberally supplied with the literature and material necessary for the prosecution of their work.

Since my last report 9 ice machines of large capacity, 3,000 to 4,000 pounds daily, have been sent to the Philippines for use in that military division, and 5 more are to be shipped as soon as finished by the manufacturers.

## RECRUITING.

The total number of men examined for enlistment in the Regular Army during the year 1899 was 70,311, of whom 64,303 were white and 6,008 were colored. The number accepted was 47,899, or 681.24 out of every thousand examined. The ratio of accepted men was 677.36 for the white and 722.87 for the colored. White men to the number of 49 and colored men to that of 26.96 per thousand declined enlistment. The rate of rejection on primary examination was 273.64 among the white and 250.17 among the colored candidates, giving a mean of 271.64.

Of every thousand examined 74.56 were rejected on account of imperfect physique, including overheight, underheight, overweight, and underweight; 41.43 for diseases of the eye, 38.06 for diseases of the circulatory system, 26.53 for diseases of the digestive system, 22.43 for affections of the genito-urinary system, 17 for venereal diseases, 9.61 for hernia; while 9.81 were rejected as generally unfit or undesirable, 3.74 as minors, 3.12 on account of bad or doubtful character, and only 1.32 on account of illiteracy, imperfect knowledge of the English language, or mental insufficiency.

Of every thousand of the accepted men 855.61 were natives of the United States, 41.61 were born in Germany, 34.18 in Ireland, 17.14 in England, 11.55 in Canada, 6.58 in Sweden, 4.68 in Russia, the remainder in various other countries.

Recruiting returns for volunteers are not rendered to this office.

## IDENTIFICATION OF DESERTERS AND OTHER UNDESIRABLE MEN.

During the year ending June 30, 1900, 9,718 transcripts of the identification cards of 5,318 delinquent ex-soldiers were filed among the classified descriptions of undesirable men, an average of 1.83 per man as compared with 2.06 for the antecedent period, and 438 transcripts were canceled. On June 30, 1900, there remained 43,248 transcripts, an average of 2.20 each for 19,643 delinquent soldiers whose enlistment would be contrary to law.

June 30, 1899, 161,212 identification cards were on file for recruits and 5,549 for released military convicts and soldiers discharged dishonorably or without honor. The receipts for the following twelve months were 21,504 and 1,090, respectively, bringing the totals, June 30, 1900, up to 182,716 and 6,639.

From July, 1890, the time of the first identification, to June 30, 1900, 1,819 identifications have been made; 18 in 1890, 111 in 1891, 215 in 1892, 104 in 1893, 110 in 1894, 121 in 1895, 108 in 1896, 68 in 1897, 347 in 1898, 480 in 1899, and 137 during the first half of 1900.

## HOSPITALS, POST AND GENERAL.

During the past year modern hospitals were completed at Fort Adams, R. I.; Madison Barracks, N. Y.; Fort Slocum, N. Y., and Fort Banks, Mass. Additional wards, kitchens, and dining rooms were added to the hospitals at Fort Ethan Allen, Vt., and Fort Porter, N. Y., and a new kitchen was added to the hospital at Fort Monroe, Va. The hospital at Mayaguez, P. R., was reconstructed, and the hospital at San Juan, P. R., was provided with new plumbing and otherwise improved. Plans and specifications were also prepared for a hospital at Santa Clara Barracks, Cuba.

New mortuaries of brick were erected for the hospitals at Washington Barracks, D. C.; Fort Wadsworth, N. Y., and Fort Crook, Nebr.

An additional ward for fifty beds and a new kitchen are in course of construction at the Army and Navy General Hospital, Hot Springs, Ark., and new hospitals are being erected at Fort Terry, N. Y.; Fort Preble, Me.; Fort Williams, Me.; Fort Strong, Mass.; Fort Leavenworth, Kans.; Fort Ontario, N. Y.; Fort Howard, Md.; Fort Du Pont, Del., and an important addition is being made to the hospital at Washington Barracks, D. C.

New quarters for hospital stewards were completed at Fort Snelling, Minn.; Fort Washington, Md., and at the Army and Navy General Hospital, Hot Springs, Ark. New quarters are now in the course of erection at Fort McDowell, Cal., and at Washington Barracks, D. C.

A general hospital or sanitarium for the treatment of officers and men of the Army suffering from pulmonary tuberculosis was established on my recommendation during the past year at Fort Bayard, N. Mex. Transfers of enlisted men suffering from this disease are made on the recommendation of medical officers of the Army forwarded through military channels. Discharged soldiers who are entitled to the benefits of the United States Soldiers' Home, Washington, D. C., are cared for at this establishment when sent by order of the board of commissioners of the Home, the expense for the maintenance of such soldiers being paid from the Soldiers' Home funds. On January 6, 1900, there were 47 patients under treatment at this sanitarium; on June 30, 83, and at the present date, October 17, 109.

The general hospital at Savannah, Ga., and the Josiah Simpson General Hospital at Fort Monroe, Va., were closed during the year, the necessity for their continuance having ceased. Besides the special hospitals at Hot Springs, Ark., and Fort Bayard, N. Mex,, there are now in service in the United States only two general hospitals—one at

Washington Barracks, D. C., and the other at the Presidio of San Francisco, Cal. The one supplies the needs of the troops serving in the eastern part of the country, and is utilized as a training school for recruits for the Hospital Corps. The other receives sick men from organizations en route to the Division of the Philippines and patients sent from the hospitals in Manila for the benefit of the home climate. The following report describes the organization and management of this establishment:

### REPORT ON THE UNITED STATES ARMY GENERAL HOSPITAL, PRESIDIO OF SAN FRANCISCO, CAL., FOR THE YEAR ENDING JUNE 30, 1900, BY MAJ. A. C. GIRARD, SURGEON, UNITED STATES ARMY, COMMANDING THE HOSPITAL.

*History of the hospital.*—When the Eighth Army Corps assembled at San Francisco, and during the period of its organization, the hospital service for the troops was performed under canvas at Camp Merritt, but the climate proving unfavorable for this method of accommodation the new brick barracks at the Presidio were assigned for the purpose, pending suitable construction for hospital purposes. A general hospital was organized on December 1, 1898, in these buildings and steps were at once taken for the construction of a hospital. The plan most suited for the purpose was that of Mr. W. H. Willcox, an architect of San Francisco, and this plan was adapted to the needs of the military service under the supervision of Lieut. Col. J. V. D. Middleton, deputy surgeon-general, and Col. William H. Forwood, assistant surgeon-general, United States Army. Contracts were let early in 1899, and in May when I reported at this place I found the work well under progress. I was assigned as inspector for the Medical Department on these buildings. The location of the hospital has its advantages and disadvantages. The advantages are proximity to the city, to the post of the Presidio, and to the camps which were to shelter the troops assembling for duty in the Philippines and the volunteers returned therefrom. The disadvantages are exposure to the high winds and fogs of the Presidio, the low ground upon which it is located, and the proximity to the liquor shops adjoining the Presidio. On July 1, 1899, I was assigned as commanding officer of the hospital. I had utilized the time I was acting as inspector to make provision for the equipment of the hospital from the supply depot and for the purchase of such articles as are usually not provided by the Medical Department. Shortly after the equipment of the hospital the number of its inmates was suddenly raised from 289 to 1,040, not only filling the wards in the new hospital, but two of the brick barracks and four of the wooden barracks at the post, which in great haste had to be supplied with the necessary equipment. Since then the average occupancy of the hospital has necessitated the continued use of the buildings at the post, as the new hospital had an accommodation of only 380 beds. Pending the introduction of a steam plant, which at first when the plans were prepared had been considered unnecessary and which I applied for soon after my arrival, the buildings had to be heated by coal stoves, where pipes could be passed through ridge ventilators, which was possible in the wards and dining rooms. All the other rooms which had not been fitted with flues had to be heated by coal-oil heaters, of which 100 were provided, as they are needed in this climate in every living room almost every day of the year. The steam plant was finally allowed and is now in course of construction and will be described hereafter.

*Description of the buildings.*—The general plan of the hospital can best be described as a quadrangle formed by a veranda, onto which abut all the buildings, except the administration building, which occupies a greater part of the front, with on either side the buildings for male and female nurses. The five wards abut on the veranda on each side. At the lower side it is traversed by the dining room and kitchen buildings; in the center and at either corner the quartermaster, commissary, and baggage buildings on one side, and the hospital corps dining room, and kitchen on the other. The buildings are framed with redwood weatherboarding, elevated above the sloping ground from 5 feet in the upper buildings to 20 in the lower; basements inclosed with latticework, with the exception of those of the three last-mentioned buildings, which are converted into rooms.

The administration building is a two-story building intersected in the center by cross and longitudinal halls dividing the building into front and rear rooms. To the right of the front hall are the two rooms assigned to the executive officer, 13 by 16 feet each. The next room, 13 by 16 feet, is used for a medical library, and the corner room, 17 by 17 feet, for the office of the commanding officer, and the room back of this, 12 by 13 feet, for the office of the chief nurse. On the left of the entrance the first room, 13 by 16 feet, information bureau; the next room, 13 by 16 feet, officer of the day; next room, 13 by 16 feet, stenographer's room and closets for records; and the large corner room, corresponding to the commanding officer's and chief nurse's room combined, is used for the record clerks. After passing the longitudinal corridor from the front entrance we reach on the right a staircase, 4 feet 8 inches, with two landings leading to the upper story; next to that the water-closet, lavatory, bathroom, and small storeroom—the whole 21 feet long by 16 feet deep. The room next to that, 6 feet 6 inches by 16 feet, which was originally designated as clothes lockers and of no use in that capacity, was converted into a telephone room. The next room, 12 by 16 feet, is the commissary's office, and the corner room, 13 by 16 feet, the quartermaster's office. To the left of this hall the rooms are assigned as follows: The first room, 13 by 16 feet, for post-office with money-order office, established at my request by the Post-Office Department; the next room, 13 by 16 feet, as a printing office; the next as a room for the property officer and sleeping accommodations for two night clerks for the dispensary; the next to this the corner room, the dispensary, 17 feet 8 inches by 16 feet. These rooms all front on verandas, with double windows, and their doors all lead to the corridor with the exception of the dispensary, which has a door opening on the veranda.

The second story has been utilized as follows: In front of the hall a room assigned to a dentist; all the rooms to the right, seven in number, assigned to medical officers as quarters; the room over the commissary's office as photograph room, and the water-closet, lavatories, and bathrooms are over the corresponding rooms below. The rooms to the left of the hall front, five, are assigned as officers' wards. Those over the property officer's room are used as an eye, ear, and throat clinic; next to this an X-ray room, and adjoining this the pathological laboratory. Only six rooms in this building are provided with fireplaces.

To the left of the administration building, abutting on the lateral veranda, is the building for female nurses. It is a two-story structure with twelve sleeping rooms for nurses, 11 by 13 feet 6 inches each, opening on a central corridor of 8 feet. At one end is a dining room, 24 by 13 feet 6 inches, and opposite to it a scullery, 7 feet 6 inches by 13 feet, and kitchen, 10 feet by 13 feet 6 inches, and a lavatory, water-closet, and bathrooms. Opposite the bathroom is a staircase leading to the second story which has twelve rooms, 11 feet by 13 feet 6 inches each, and five rooms, 7 feet by 13 feet 6 inches each, abutting on the lavatory and bathrooms and staircase. There are no conveniences for heating this building, and coal-oil heaters have to be used until the steam plant is introduced.

At the opposite angle of the front of the hospital, abutting on the veranda, are the barracks for the hospital corps. It is a two-story building with a dormitory in each story, 36 feet 4 inches by 68 feet 6 inches. Abutting on this toward the veranda are rooms, 13 feet 8 inches by 9 feet 6 inches each, used for clerk's office, hospital steward's room, barber shop, and tailor shop, and farther toward the veranda a room with clothes lockers, 6 feet by 13 feet 8 inches, and staircase; on the opposite side water-closets, lavatories, and bathrooms with two bath tubs. The same arrangement is in both stories, except that the rooms are differently assigned.

The wards are isolated buildings, abutting as aforesaid on the veranda and variously raised from the ground as stated above. Their height is 15 feet by 24 feet by 127 feet, with 16 windows on each side. At the end nearest the veranda are, on the right side from the entrance, the linen room, 7 feet by 11 feet 9 inches, a diet kitchen, 8 feet by 11 feet 9 inches, and the wardmaster's room, 8 feet by 11 feet 9 inches. On the opposite side a bathroom, 6 feet; wash room, 6 feet, and a water-closet, 10 feet, all by 11 feet 9 inches, and separated by a hall 7 feet 6 inches. At the other end is a room 20 by 24 feet, which is used as a recreation room, and connects with the outside by a staircase. The floors of the wards are pine, with paraffin dressing. At present they are heated by three coal stoves, but when the steam plant is completed there will be a radiator underneath each window, connected with the fresh-air register, running under the floor of the ward, which receives its fresh air by suction from a shaft at the outer end of the ward. Underneath each bed is a foul-air register, which connects by a metallic duct with the foul-air duct running under the center of the ward and connecting with a brick shaft at the front end of the ward, in which, by means of steam coils, the air will be accelerated for aspiration. There are over each ward three metal ventilators reaching to the roof, with a register at the bottom, which is closed when artificial ventilation is used. For inlet the windows are provided with movable transoms 32 by 22 inches. The wards, allowing two beds between the windows, accommodate 40 patients. The wards have been named by the letters of the alphabet, commencing on the left.

The original plans of the hospital contemplated an operating pavilion, which, for the sake of economy and the improbability of much surgical work being done in this hospital, was cut off from the original plans and in place ward C was partitioned off for the purpose. The result is that ward C contains 28 beds instead of 40. The exterior end of the ward on the left side entering has a room 9 feet 9 inches by 14 feet, which was designated as a pantry, but as this ward has already a pantry, this room was converted into a dressing room for minor surgical operations. It contains a sink and shelving. Next to this is a vestibule 7 feet by 8 feet 9 inches, which has an entry on the outside staircase which, in place of communicating with the end room, gives ingress through this vestibule. Next to this is a room 10 feet by 8 feet 9 inches, which was designated as a recovery room, but it will be utilized as a sterilizing room as soon as the sterilizer lately received is put in connection with the steam apparatus. To the right on entering this section of ward C is a room 14 feet by 18 feet 9 inches, which was designated as a nurses' room, but has up to the present time been used as a sterilizing room, and on this room being transferred will probably be utilized as a recovery room. Next to this, opposite the vestibule, is a wash room, into which I had placed foot-cock washtubs. This room is intended for a final preparation room for operations. These four rooms are separated by a hall 5 feet 6 inches wide, which connects by a double door with the ward. Next to the wash room is a room 10 feet 8 inches by 8 feet 9 inches, which is designated as an etherizing room. It has, however, been used as an instrument room and for the keeping of sterilized dressings, being occasionally used for etherizing when more than one patient was to be operated on. The end of the ward has been set aside as an operating room and is 20 by 24 feet, perhaps unnecessarily large. It has a skylight 5 feet square in the ceiling and is lighted by four windows. The floor is now being tiled. It is lighted by two 4-light chandeliers and two droplights.

At the lower end of the lateral veranda is the building called the quartermaster storehouse. This was finished at first only in the second story, while the basement, which was 12 feet above the ground on its lower end, was left unfinished. It having been found that no provision had been made in the hospital for a baggage room of the patients, every one of whom arrived with some kind of a box from the Philippines, it was deemed best to set aside the upper room for a baggage room and to complete the basement for the quartermaster and commissary storeroom. The building is 70 by 24 feet. On entering it, two rooms opposite each other, 7 feet 10 inches by 16 feet, have been planned as mattress room, in which capacity they were not needed, and one room was converted into a storeroom for camp and garrison equipments and the other for ordnance. The other room, 54 by 24 feet, was arranged with 400 pigeonholes in ten movable cases for the storage of the minor articles belonging to patients, so as to leave the wards entirely without any baggage. The basement was arranged at one end with shelves and drawers for clothing, and at the other end, separated by a 5-foot passage, for commissary supplies, the plan being to make the general hospital entirely independent of the post in its quartermaster and commissary supplies. A staircase leads from the veranda to the entrance of the basement.

The dining room abuts on the lower veranda and connects with the main veranda by two verandas which intersect it at the center. The building is 158 by 28 feet. Within 24 feet of its end it has an L, increasing its size by 18 feet. The dining room proper is 122 feet 7 inches long with five ridge metallic ventilators and nine windows on each side and three at the end. It accommodates ten tables with twenty seats each. At the lower end of the dining room it is partitioned off into a pantry 8 by 16 feet, with sinks and shelving. A sideboard for dishes is built on the dining-room side against this partition. A passage 8 feet wide permits ingress from the lower veranda with double doors. The room forming the L, 24 by 30 feet, was designated as an officers' mess, but as the officers, unlike those in civil hospitals, do not eat from the hospital mess, this room was used for other purposes, and has been arranged for a chapel and reading room. It contains also a library contributed by friends of the soldiers.

Opposite the dining room, on the other side of the veranda, there abuts on to it the kitchen building, which was originally intended only to be finished on the level with the veranda floor. It was intended to have the bakery on the same floor, but finding that this would too much crowd the space the basement has been completed into a bakery, one corner being partitioned off for the 2,000-gallon heater which supplies all the rooms in the hospital with hot water. The kitchen building is 71 feet long by 38 feet 10 inches wide. On entering the building through a hall 8 feet wide there is on the right-hand side a scullery, 14 by 20 feet, with a large wooden sink and china closets, connecting with the hall and the kitchen by double doors. On the left-hand side, with its entry into the kitchen, is the kitchen storeroom of the same size, part of which was intended to be divided off into a cold-storage room, The kitchen proper, as originally planned, was to have milk, coffee, water, tea urns. steam kettles for soup, meat, vegetables, and eggs, which were cut off when the steam plant was originally disapproved. These will now be introduced. Meanwhile the cooking has been done on a French range extending the farther width of the room. Tables, dressers, shelves, sinks, and a dumb-waiter to the bakery complete the equipment of this room. It has two metallic vent cowls and is lighted by five windows on each side.

The next building to be considered corresponds in location to the baggage building at other end of the lower veranda. It was originally intended and designated "Detailed men's building." As there are no detailed men, and there was no provision made for a separate dining room and kitchen for the hospital corps, who are not living on the 40-cent ration, it was deemed best to put in additional rooms to complete this building. The floor on the level with the veranda has a dining room for the hospital corps, and the basement is divided into a kitchen for the hospital corps and storeroom for the general mess. This building is 72 feet 4 inches long by 25 feet 6 inches. It is entered through a 5-foot hall, on the right side being a lavatory, water-closet, and urinals, and on the left side a bathroom. These were left undisturbed. The dining room proper is 62 feet by 22 feet 6 inches, with two central metallic ventilators, and at the exterior end is divided off into two rooms, one for a pantry and one for dumb-waiter and service room equipped with necessary shelves.

Immediately in the rear of the main kitchen building is situated a building 85 by 23 feet, one end of which, 12 feet wide, was partitioned off as a mortuary, divided into two rooms of equal size.

The veranda on which all the buildings abut is 14 feet 4 inches and about 10 feet high, with roof sloping upward, which was originally covered with tar paper, but this having been found to be not durable has been replaced by tin. The basement of the veranda is closed by lattice panels of various heights. The outside of the veranda is inclosed with windows. The lower basement of the veranda has been found useful for storerooms, carpenter and paint shop, baggage room for the hospital corps, and has been divided off into a number of suitable apartments.

*The steam plant.*—As soon as I became acquainted with the climate of the Presidio I became convinced that some sort of artificial heat would be necessary to make the new hospital habitable, and I therefore urged reconsideration of the disapproval of the steam plant, which finally was approved. The use of this plant for ventilating purposes has been detailed above. In addition to this the smaller rooms will be provided with radiators on the direct method, and the dormitories of the hospital corps with direct indirect radiators and the necessary wooden aspirating flues. This steam plant by utilizing high pressure will permit the running of an ice plant, two dynamos, and the necessary laundry machinery, while the buildings will be heated by low pressure. The cost of washing done outside of the hospital has averaged $900 a month, and an equal sum was paid for electric lighting of the hospital, while the ice bill of the hospital averaged about $70 per month, and therefore this plant will effect a saving per year of $18,000 in the running of the hospital after deducting the expenses of its management:

*Medical and surgical work performed during the year.*—There were admitted during the year: State volunteers, 1,414; United States volunteers, 972; regulars, 2,198. Of the State volunteers, 9 died and 48 were discharged on certificates of disability; of the United States volunteers, 5 died and 104 were discharged for disability, and of the regulars, 52 died and 374 were discharged.

The following surgical operations were performed during the year, with two exceptions, all by myself:

| | | | |
|---|---|---|---|
| Hernia | 36 | Circumcision | 16 |
| Appendicitis | 13 | Enucleation of glands | 6 |
| Extraction of bullets | 8 | Varicocele | 10 |
| Osteoplastic operations | 12 | Amputations | 7 |
| Empyema | 2 | Abscess of liver | 1 |
| Aneurism | 1 | Carcinoma | 3 |
| Contractures | 1 | Other operations | 34 |
| Abscess | 3 | | |
| Enucleation of eye | 7 | Total | 178 |
| Hemorrhoids | 18 | | |

Of these operations 2 for hernia were performed by Col. W. H. Forwood, assistant surgeon-general, on my invitation, and 1 by Capt. H. A Shaw, assistant surgeon, United States Army.

Three cases were fatal, not, however, in consequence of the operation. One was appendicitis, which was brought after general peritonitis had set in. Another was trephining for fracture of the skull with general paralysis. (At the post-mortem the base of the skull was found fractured in addition to fractures of the dome.) The third was an exploratory laparotomy for supposed abscess of the liver; the patient did not die from the effects of the operation.

The clinical histories of these cases have been filed by hospital numbers and entered with their number on a nosological index to facilitate future investigation and research. The majority of the patients were brought by transports from the Philippine Islands, the remainder came from the volunteer camps, State volunteers on their return from the Philippines, and United States volunteers prior to their departure for foreign service.

The medical service was attended to practically by contract surgeons, who until lately were subject to frequent changes. As a rule, 1 medical officer attended to 2 wards of 40 patients each in the new hospital, and in addition these surgeons were charged with such work as attending officers' wards in the administration building, the eye and ear clinic, X-ray and photographic work, medical attendance on the hospital corps, supervision of patients' baggage room and library. The surplus of medical officers generally were assigned to duty in the various buildings occupied at the post when the capacity of the hospital proper was exceeded. The number of hospital stewards and hospital corps men employed at the hospital averaged from 130 to 150.

The number of female nurses employed at the hospital at its first occupancy was 34, which number was gradually increased to 50 and then reduced to 40 on my recommendation. The general assignment was 2 nurses for day and 1 for night duty, with such increase in detail as appeared necessitated by the number of bed cases. During the year 113 nurses have been at this hospital, of whom 69 were sent to the Pacific islands, and 10 ordered home for annulment of contract—services no longer being required—4 ordered home for annulment on account of ill health, and others transferred to various places. Thirty-six nurses have been on temporary duty awaiting orders. The conduct of the nurses has been exemplary and they have been faithful in the performance of their duties. While the number assigned appears excessive, and the nurses were not at all times occupied, it is believed that their mere presence in the wards was of great value in keeping up propriety of conduct on the part of the patients. The service for the sick was no doubt performed with greater exactness than would have been the case with members of the hospital corps, who, during the Spanish war and subsequently, were not selected with the care which could be given in peace times.

The part of this report pertaining to general organization was prepared at my request by Capt. H. A. Shaw, assistant surgeon, United States Army.

*Organization of the hospital.*—The administrative staff of the hospital consists of the following heads:

(1) Record officer.
(2) Property officer.
(3) Mess officer.
(4) Admitting physician.
(5) Officer of the day.
(6) Ward officer.
(7) Officer in charge of patients' property.
(8) Officer in charge of preparation of disability certificates.
(9) Officer in charge of detachment of hospital corps.
(10) Officer in charge of clinical records.
(11) Pathologist.
(12) Chief nurse.

This report is intended to give an outline of the work done in each department and the methods by which it is accomplished. The number of departments under the control of a single officer varies with the number of officers on duty. With the departments well organized and under competent stewards and clerks, the executive officer of the hospital should manage the departments of records, property, and mess, and command the hospital corps. The officer of the day is detailed by roster. One ward officer, in addition to the care of 80 to 100 patients, should take the department of patients' property; another ward officer the preparation of disability certificates and the clinical records. The pathologist for a general hospital should be selected with reference to that particular line of work. In a large general hospital his time will be fully occupied in making routine examinations of blood, urine, feces, post-mortem material, etc., so that he should never be called upon for ward work or other duty which would take him away from the laboratory.

*Record officer.*—This officer supervises the preparation of the official papers pertaining to patients. His chief clerk is a hospital steward, who directs the work of the record office, and is assisted by clerks whose duties are as follows: One clerk in charge of the post return; 1 in charge of the report of sick and wounded; 1 in charge of the preparation of final statements and the file of descriptive lists; 1 in charge of letters-received book; 1 in charge of letters sent; 1 in charge of the preparation of the consolidated morning report of patients; 2 clerks in charge of the preparation of muster rolls, pay rolls, and clothing schedules (one of these clerks is in charge of the card index of patients' records); 1 clerk in charge of preparation of certificates of disability.

The most important single report made in the record office is the "Consolidated morning report of patients," for upon its accuracy in every detail depends the correctness of the post return, and if this report is unreliable no dependence can be placed on the official returns from the hospital. This report is made upon the following form:

*Consolidated morning ward report.*

U. S. ARMY GENERAL HOSPITAL,
*Presidio of San Francisco, Cal., ............., 1900.*

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Strength. | | | | Present and absent. | | Alterations since last report. | | | | | | | | | | | | | | | | | | | |
| | | Absent. | | | | | Gains. | | | Losses. | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Discharged. | | | | | Transferred. | | | | | | | | | | | |
| Wards. | Patients present. | On furlough. | Without leave. | | Aggregate present report. | Aggregate last report. | Original admission. | Transfers (ward). | | Expiration of service. | For disability. | By order. | | | To duty. | A. & N. Gen. Hospital. | Gov. Insane Asylum. | Fort Bayard. | Wards. | | Died. | Deserted. | Escaped. | Discharged soldiers left hospital. | Civilians left hospital. | Vacant beds. |
| A | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | | | | | | | | | | | | | | | | | | | | | | | | | | |

The data for this report come from two independent sources: First, from the ward; and second, from the officer of the day. Each ward reports to the record office at 9 a. m. daily the changes which have occurred in that ward for the twenty-four hours previous to 7.30 a. m. of that day, on a form with headings similar to those of the consolidated report, the changes being given also by name and organization.

*Morning report of patients.*

Ward ...... ............., 1900.

Name of ward master or nurse preparing report: ............

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Strength. | | | | Present and absent. | | Alterations since last report. | | | | | | | | | | | | | | | | | | | |
| | Absent. | | | | | Gains. | | | Losses. | | | | | | | | | | | | | | | | |
| | | | | | | | | | Discharged. | | | | | Transferred. | | | | | | | | | | | |
| Patients present. | On furlough. | Absent without leave. | | Aggregate present report. | Aggregate last report. | Original admissions. | Transfers (ward). | | Expiration of service. | For disability. | By order. | | | To duty. | A. & N. Gen. Hospital. | Government Insane Asylum. | Fort Bayard. | Wards. | | Died. | Deserted. | Escaped. | Discharged soldiers left hospital. | Civilians left hospital. | Vacant beds. |
| | | | | | | | | | | | | | | | | | | | | | | | | | |

Printed directions for making up the morning ward report are posted in the ward register, as follows:

"Carry forward from previous report the number reported in column 'aggregate present report' and place this number in column 'aggregate last report.' Enter all gains and all losses in proper columns. Add total gains to 'aggregate last report,' and subtract total losses, placing remainder in column 'aggregate present report.' Enter in proper columns the number absent on furlough and absent without leave and subtract the total absent from 'aggregate present report,' placing remainder in column 'patients present.' All the above entries are to be made by reference to the ward register, which should contain all the necessary information. All changes will be reported by name and organization. Enter first original admissions, then transfers (ward), and follow with other changes in the order named in report. Every change will be headed with the designation of the gain or loss, as—

*Original admissions.*

1. Smith, John, pvt., E, 13th Inf.; 25; W; Mass.; 3¼; *Sheridan.*
2. Stevens, James, cpl., I, 9th Cav.; 31; C; Miss.; 10½; command.

*Lost by transfer.*

1. Rice, John J., to ward C.

*Discharged for disability.*

1. James, William C., pvt., B, 23d Inf.

*Gained by transfer.*

1. Wright, James J., pvt., A, 3d Art., from ward B.

*On furlough.*

1. Williams, George J., pvt., B, 6th Inf., till May 4, 1900.

"In the column for remarks note, in cases of 'original admission,' the age, race, birthplace, years service, and source of admission (in the order named); in cases received by transfer from other wards, the ward *from* which transferred; in cases returned to duty, whether in 'duty in United States' or 'full duty;' in cases transferred to other wards, the ward *to* which transferred; in case of death, cause and hour of death.

"When a patient is discharged from the service and remains in hospital, he should be dropped as an enlisted man and taken up on the same report as an original admission, and carried on the ward register as a discharged soldier.

"When a patient on furlough fails to return to the ward at the expiration of his furlough, he will be dropped from the column 'On furlough' and taken up in column 'Absent without leave,' with appropriate remarks as 'Smith, Thomas, private, B, 6th Infantry, from on furlough to absent without leave.'

"When a patient returns from furlough, he will be dropped from the column 'On furlough' and taken up in column 'Patients present' with appropriate remark below."

The officer of the day reports to the record office daily the names of all patients admitted for the twenty-four hours preceding 7.30 a. m. of that day, on the following form:

*Admissions for twenty-four hours.*

[U. S. Army General Hospital, Presidio of San Francisco, Cal.]

Ending 7.30 a. m............, 1900.

| Name. | Rank. | Company. | Regiment. | Age. | Birthplace. | Years service. | Ward. | Hosp. No. |
|---|---|---|---|---|---|---|---|---|
| 1. ............................ | | | | | | | | |
| 2. ............................ | | | | | | | | |

Departures are reported on a similar form.

These two reports (from the wards and from the officer of the day) are carefully compared by the clerk compiling the consolidated report, and if found to correspond the one with the other, the consolidated report is made accordingly—for instance, if the officer of the day's report shows John Smith admitted to ward A, the ward officer of that ward should report him as taken up as an "original admission," and similarly if the ward officer of ward B drops James Allen as "returned to duty," the officer of the day should report him in the list of departures. This double check on admissions and departures has been found absolutely necessary to prevent error. When the morning report is completed and signed by the executive officer and the commanding officer, it is passed to the clerk in charge of the report of sick and wounded, who enters on his register the names of patients admitted and the particulars as to those disposed of, checking each name in the column prepared for the purpose. (This clerk also enters on the officer of the day's report "Admissions for twenty-four hours" in the proper column the hospital number of each patient. This report is then returned to the officer of the day who enters the hospital number on the bed cards and index cards.) The consolidated report then goes to the clerk in charge of the card index who enters the data on the individual cards, making a check against each name and reporting any discrepancies as compared with the cards that he may observe. The morning report is next passed to the clerk in charge of descriptive lists, who obtains from it the names of men disposed of in order that he may make proper disposition of the descriptive lists.

In order to facilitate ready reference to a patient's record and also to diminish as far as possible liability to error in the keeping of the various records, the card-index system has been introduced. The complete record of each patient, so far as it pertains to medical status, pay, clothing, court-martials, correspondence, etc., is recorded on a card prepared for the purpose, properly indexed and filed.

When patients are to be discharged from the service or transferred to other hospitals, the ward officer is informed of the fact by notification from the record office on the following blank:

U. S. ARMY GENERAL HOSPITAL,
*Presidio of San Francisco, Cal.*,
............., 1900.

The following-named patients will be discharged from this hospital on............and their names will be dropped on the morning ward report of............ They will be sent in charge of the ward master to report to the officer of the day at 10.30 a. m.............with a *disposition slip* signed by the ward officer.

| Surname. | Christian name. | Rank. | Company. | Regiment. | Ward. | Authority for discharge. | Signature of ward officer or head nurse, ward master. |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

The property officer is charged with the care and accounting of public property. The following general order has been published in regard to this subject:

### PUBLIC PROPERTY, ITS CARE AND ACCOUNTABILITY.

"In order to protect the public property at this hospital from loss and unnecessary damage, medical officers will be required to receipt to this office for all property in that part of the hospital over which they have control. These receipts will be made upon a prescribed form and will be rendered when the officer first assumes charge of the property. Careful distinction will be made between medical and quartermaster property, each being receipted for on a separate blank.

"Each ward will be supplied with a property book, in which will be entered all articles of public property, proper notation being made of all articles received and all expended or lost.

"Whenever public property is issued from this office, it will be accompanied by an invoice signed by the property officer and by a receipt for the signature of the receiving officer, who will, after personally verifying the property, return the receipt to this office.

"If a transfer of property is ordered from one building to another, the issuing officer will prepare invoices and receipts in duplicate; one invoice and both receipts will be sent to the receiving officer, the other invoice to the property officer. The receiving officer will sign both receipts, sending one to the issuing officer and one to this office. Any discrepancy will be reported.

"All property received by issue from this office, by transfer, or found in ward, as well as all property issued by the officer, lost or destroyed, will be duly accounted for in the property book and also on the form 'Statement of property.' This form will be rendered to this office on the last day of each month, showing the dates of receiving and of disposing of all property during the month. In addition, a 'Statement of losses' will be rendered at the same time.

"Each ward officer will require his wardmaster to verify all public property in the ward on the 10th and 20th of each month. The ward officer will make a personal check of the property at the end of the month. All losses of or damage to public property will be promptly reported to this office. So far as possible, damaged property will be exchanged for that which is serviceable, in which case no invoice or receipts will be exchanged. When property is turned in to this office, the property officer will give his receipt to the responsible officer.

"Public property which has been placed in wards, offices, or other rooms of this hospital will not be removed except by direction of the commanding officer."

The blanks used in connection with the above order are these:

*Monthly statement of medical property.*

Ward......

Month of............1900.

| Property received. | | | Property disposed of. | | |
|---|---|---|---|---|---|
| Date. | Articles. | No. | Date. | Articles. | No. |
| | | | | | |

I certify that this statement is correct.

.................,

............,

*Ward Officer.*

*Monthly statement of losses of medical property.*

For the month of ............, 1900.

Ward .......

| Date. | Articles. | No. | Articles. |
|---|---|---|---|
| | | | |

I certify that this statement is correct.

.................,

.................,

*Ward Officer.*

The admitting physician is the officer of the day. His duties are prescribed in the following general orders:

"The detail for officer of the day will be made by roster. His duties will begin at 9 o'clock a. m., and will continue during the succeeding twenty-four hours. He is the admitting physician of the hospital, and will examine all patients admitted and all discharged during his tour. Each patient admitted will be provided with an admission slip signed by the officer of the day. This slip will show the name, rank, company, regiment, age, birthplace, and years of service, as well as the ward to which he is assigned. It will be given to the head nurse of the ward, and the information will be copied in the ward register and also on the next morning ward report. The officer of the day will examine the ward papers of each patient sent to him for discharge, which should comprise (1) clinical history of patient, (2) disposition slip. He will see that these papers are duly signed by the ward officer, adding his name to the disposition slip as evidence that he has examined the patient and has found that the proper papers have been sent in by the ward officer.

"The officer of the day will not be held for the correctness of these papers.

"The officer of the day will keep a list of all admissions and departures, which he will sign before 7 a. m. and send to the record office.

"The officer of the day will inspect all the wards of the hospital at least once before 7.30 p. m., and all the wards of the new hospital between midnight and reveille, receiving a verbal report from the night nurse in each ward. He will inspect the guards at the door of the administration building and at the rear of the hospital at these times, receiving their reports, noting whether or not they are familiar with their duties.

"The officer of the day will make a written report to the commanding officer in regard to the condition of the wards, the general sanitary condition in and about them, together with the number of patients admitted and discharged during the day.

"The officer of the day will be present at reveille roll call of the hospital corps on the rear porch of the administration building, receiving the report of the steward in charge. Absentees will be reported to the commanding officer.

"The officer of the day at this hospital will in future confine himself to the limits of this reservation during his tour of duty. He will be found on duty in his office between the hours of 10 and 11.30 a. m. for the purpose of inspecting patients who are sent from the hospital. Ward officers will not send to the officer of the day patients for disposition except between the hours of 10 and 11 a. m. At other hours than those above mentioned the officer of the day will be found in his office, except when attending the necessary duties of the officer of the day and those in connection with his wards. The officer of the day will not exchange his tour with another officer except by authority of the commanding officer.

"Upon the arrival of patients in wards the officer of the day will send bed cards and index cards to the ward officer who will, without delay, fill them out in all possible particulars and return them to the officer of the day.

"The greatest care will be exercised that the spelling of names, the designation of organizations, and all other entries on the cards be correct in every particular."

The "Admission slip:"

*Admission slip.*

U. S. A. GENERAL HOSPITAL, PRESIDIO, S. F., CAL.

............1900.

| | |
|---|---|
| Surname. | Christian name. |

| | | | | |
|---|---|---|---|---|
| Rank. | Company. | Regiment. | Age. | Race. |

| | | |
|---|---|---|
| Birthplace. | Years service. | Source of admission. |

The head nurse, ward......., will admit this patient. The above data will be entered on the ward register and also on the index card, which will be immediately sent to the Officer of the Day.

.................,
*Officer of the Day.*

The "Disposition slip:"

*Disposition slip.*

U. S. Army General Hospital,
*Presidio of San Francisco,............1900.*

| | |
|---|---|
| Surname. | Christian name. |

| | | |
|---|---|---|
| Rank. | Company.. | Regiment. |

This patient has been discharged from ward......this date by reason of:

(Enter below method of disposition.)

..........................................................................

..........................................................................

Diagnosis.................................................................

..........................................................................

...............................................in line of duty—Yes or no.

.................,
*Ward Officer, Ward......*

I certify that I have identified this patient and that I have received the required records from his ward.

.................,
*Officer of the Day.*

This slip will be made out for every patient discharged from the hospital. The patient will be sent to the officer of the day, accompanied by the wardmaster.

The "index card" referred to in the above orders is for file in the office of the officer of the day. This is the office to which visitors are sent with various inquiries, and the file of cards is a sort of bureau of information for visitors:

| | | |
|---|---|---|
| Surname. | Christian name. | Ward. |

| | | | | | |
|---|---|---|---|---|---|
| Rank. | Company. | Regiment. | Age. | Race. | Hosp'l No. |

| | | | |
|---|---|---|---|
| Birthplace. | Years service. | Date of admission. | Date of disposition. |

| | |
|---|---|
| Source of admission. | Method of disposition. |

Name and address of nearest relative or friend.

..........................................................................

..........................................................................

These cards are filled out in the ward and not in the office of the officer of the day for the following reason: Patients are usually received at this hospital in large numbers and at comparatively infrequent intervals. If the work of carding them is divided up among twelve or fifteen wards, a complete file of admissions can be obtained in a very short time, and this is an important consideration in a hospital near a large city, where visitors come in crowds with each arriving transport, asking for information.

The "bed card" for each patient is filled out in the ward immediately after his arrival, and is sent at once to the officer of the day, who enters the hospital number and returns it to the ward.

U. S. ARMY GENERAL HOSPITAL.

PRESIDIO OF SAN FRANCISCO, CALIFORNIA.

**Ward**...... **Bed No**...... **Hospital No**......

**Name** ..........................................................................

**Rank** ..............................**Co**......**Regt** ...............................

**Admitted** ........................................................................

**Discharged**.....................................................................

The duties of the guard are prescribed in the following general order:

"1. The guard on duty at the administration building will confine himself to the immediate vicinity of the front door. He will refuse admittance into the hospital of all unauthorized persons. Visitors will be taken to the officer of the day to receive a pass before being allowed to leave the administration building. The guard will not allow patients to leave the hospital without a pass. All enlisted men returning from pass will enter the hospital by the door of the administration building and will surrender their passes to the guard, who will note the hour of return and turn in the pass to the officer of the day.

"The guard on duty at the rear of the hospital will be found in the immediate vicinity of the boiler room when not on other duty connected with this detail. He will keep the boiler in good working order and the room clean. At night, between 6 p. m. and 6 a. m., he will make rounds at least once every two hours, trying all doors in the buildings in rear of Wards E and F, and will see that the windows and doors are closed and have not been tampered with. He will lock the gates of the hospital at retreat and unlock them at reveille, and will prevent patients and other persons from leaving the hospital in any unauthorized way.

"Guards will keep a sharp lookout for fire and will at once notify the officer of the day in case of its discovery."

The ward officer, in addition to his professional duties, makes the following reports:

1. A "Morning report of patients," on the printed form already referred to.
2. A weekly report on the following form:

*U. S. Army General Hospital,*
*Presidio of San Francisco, Cal.,*
............., *1900.*

Ward .......

The following-named enlisted men are, in my opinion, fit subjects for discharge or transfer, as noted below:

| Surname. | Christian name. | Organization. | Remarks: State whether discharge on surgeon's certificate of disability, transfer to Fort Bayard, or transfer to Hot Springs is recommended. |
|---|---|---|---|
| | | | |

................., *Ward Officer.*

NOTE.—This report will be made at 10 a. m. on Monday of each week to the executive officer. If the ward officer has no case for such disposition, he will so report on this form. Form 1-73.

3. A "Monthly statement of property" and "Statement of losses" on the prescribed forms.

He keeps the following records in his ward:

1. "Register of patients." This shows on the successive pages of a book from day to day the names of each patient in the ward, the organization to which he belongs, the date of admission, and upon his departure from the ward the method of disposition.

2. A "clinical history" of each patient. The following circular has been issued regarding the preparation of this history:

"Ward officers will exercise especial care that the form for the clinical record be complete before sending it to the office for file. When a patient leaves the hospital, there should be a clear and concise history of the case, giving dates as nearly correct as can be obtained, such for example as the date of arrival in the Philippine Islands, of any attack of illness after arrival with its duration, the date of onset of the present attack, that of departure for the United States, etc.

"After admission to this hospital, notes will be entered on a sheet headed, 'Progress of the case,' at sufficiently short intervals of time, from a day to a week, according to the case, to give at any point in the course of the disease a comprehensive exposition of the conditions present. Printed forms are provided for clinical histories, showing temperature, pulse, and respirations, and for pathological reports, such as examination of sputa, feces, urine, etc.

"When a man is transferred from one ward to another, the ward officer making the transfer will make the note in the 'Progress of the case,' 'Transferred from ward ...... to ward ......,' and append his signature.

"When a man ceases to be an inmate of the hospital, the ward officer will see that the date and manner of disposition and the condition of the patient at this time are entered on the form for clinical history and that the form is signed; only the signature of the officer last in charge should be found on this sheet, that of others who may have attended the case appearing under a note of transfer."

The diagnosis of each patient is reported to the record office, as soon as it is established, on the following form:

*Diagnosis card.*

Ward...... Hospital number......

Surname. Christian name.

..........................................................................................

Rank. Company. Regiment.

..........................................................................................

Diagnosis or complication. (Erase either not required.)

In line of duty—Yes or No.... ................

*Ward Officer.*

Date............1900.

NOTE.—The diagnosis, signed by the ward officer, will be reported on this slip to the record office as soon as established. This form is also used for any change in diagnosis or any complication, which should be reported at its occurrence.

3. An "order book," in which the ward officer enters all orders, prescriptions, etc., pertaining to patients.

4. Report of the night nurse.

5. "Ward property book." In this book is kept a record of all articles of medical and quartermaster property for which the ward officer is responsible, due account being made of all property received and all disposed of during each calendar month, when a return is made to the property officer on the form "Statement of property."

When a patient is transferred from one ward to another, the following blank is used:

*Transfer slip.*

U. S. A. General Hospital,
*Presidio, California*, ............, *1900.*

| | |
|---|---|
| Surname. | Christian name. |

| | | |
|---|---|---|
| Rank. | Company. | Regiment. |

This patient will be *transferred* from ward ...... to ward .......

................,
*Ward Officer, Ward* .......

Received:

................,
*Head Nurse, Ward* .......

This slip, signed by the ward officer, will be sent with the patient to the new ward, where it will be signed by the head nurse; after entering the data on the ward register, she will send the slip without delay to the officer of the day.

The officer in charge of the surgical ward keeps a record of each surgical operation in a book prepared for the purpose.

Each ward officer has the following assistants: One head nurse and two or three assistant female nurses; one wardmaster; one ward attendant (male) for day duty; at night, one female and one male nurse. This is the usual allowance for a ward of 40 beds.

The head nurse is responsible for the proper execution of all orders she receives regarding the care and treatment of the patients in her ward. She divides the patients into sections and appoints an assistant nurse for the care of these. She prepares the morning ward report of patients and has charge of the clinical histories of the cases.

The duties of the wardmaster are prescribed in the following general order:

"1. The wardmaster is charged with the care of the public property in the ward. In order to prevent loss, he will become familiar with the articles of property with which he is charged by reference to the ward-property book, and will on the 10th and 20th day of each month make a check of all property in the ward, reporting to the ward officer all articles missing and all in excess, as shown on the property book.

"Public property in the tea kitchen will be under the direct control of the head nurse of the ward, who will hold the key of the room and will report any loss of property to the wardmaster. She will be present on the days when the property is checked, assisting the wardmaster in locating it. The key of the tea kitchen will at night be held by the night nurse.

"The wardmaster will keep in his possession the key of the linen room, except when he is necessarily absent from the ward; he will then turn it over to the head nurse or night nurse, as the case may be. The room will be kept locked at all hours.

"The wardmaster will take charge of all clothing not in use belonging to patients in his ward. This he will take to the property room, receiving a receipt therefor from the officer in charge. Overcoats of convalescent patients will be kept in the linen room of the ward, each being tagged with the name and organization of the owner. Care will be taken that no overcoat is removed by anyone not the owner.

"The wardmaster will be held responsible for the police and sanitary condition in and about his ward. To this end he will, with the approval of the ward officer, detail patients for such light duty as they are able to perform.

"The wardmaster will present himself in the diet kitchen in time to take the diet orders to his ward. He will before taking away his carriage check its contents with his retained list of orders. He will, under the supervision of the head nurse and with the assistance of ward attendance, distribute the food.

"In case of the death of a patient in the ward, the wardmaster will immediately secure all his effects, including those in property room, making an inventory of them, which will be verified and signed by the ward officer. The articles will then be stored in the linen room until final disposition is made.

"Ward linen which becomes soiled during the day will be collected in the laundry room under the ward. The wardmaster will make a list of all these articles on Form 10, taking them to the laundry building between 9 and 9.30 a. m., where they will be exchanged by the steward in charge for the same amount of fresh linen. All articles which have become worn and unfit for use will be sorted out and reported to the steward in charge as unfit for service."

An officer is detailed in charge of patients' property. Patients' private effects are kept in a storeroom with lockers prepared for the purpose. Each patient on depositing property receives a tag showing his name, organization, and a brief description of the property. The duplicate of this tag, with corresponding number, is filed in an index in the care of the storekeeper.

When a patient dies in hospital, the ward officer collects his effects and makes an inventory of them, which he sends to the executive officer on a prescribed form.

The personal effects of deceased soldiers are kept in the ward property room. When these are to be packed for shipment, the following blank is used for the protection of all concerned:

U. S. Army General Hospital,
*Presidio of San Francisco, Cal*................1900.

The ward officer of ward......will turn over all the effects of................
..............................................................................
deceased, to the man in charge of the property room, who will check them from list furnished herewith and box them for shipment to ....................
..............................................................................
at ...........................................................................

.................,
*Capt. & Asst. Surgeon, U. S. A., Executive Officer.*

---

U. S. Army General Hospital,
*Presidio of San Francisco, Cal*................1900.

I have this day boxed the effects of the above-named man and find them to agree with the list furnished me.

.................,
*Private, Hospital Corps, U. S. A.*

The necessity of exercising the greatest care in the preparation of certificates of disability is so apparent that an experienced officer has been appointed to examine carefully each case recommended for discharge and then to supervise the completion of the papers of suitable cases. Ward officers make recommendations for discharge on surgeon's certificate of disability on a form already shown.

The officer in charge of the detachment of the Hospital Corps is responsible for the discipline of his command. His duties correspond largely to those of a company commander.

The officer in charge of clinical records inspects the record of each patient on the day following his discharge from the hospital, and when necessary returns it to the ward officer for immediate correction. The record is then filed with the others in numerical sequence of hospital numbers, regulars and volunteers being in separate files.

The pathologist keeps in books prepared for the purpose a record of every examination made in the laboratory, making a duplicate report to the ward officer in each case. He makes a weekly report to the commanding officer of the hospital regarding the work done in the laboratory.

The following regulations in regard to the work of the bacteriological laboratory have been published:

"*Examination of blood.*—The blood of every patient admitted to this hospital is to be submitted to the pathologist for examination. If nothing abnormal is found, the first examination will be considered sufficient unless a request is made for another by the pathologist or by the medical officer in charge of the case. Where the malarial plasmodium or any other abnormal condition is found, the blood is to be reexamined as often as the medical officer in charge of the case considers necessary.

"*Examination of urine.*—The urine of every patient admitted to the hospital is to be examined at least once; in cases which show no pathological condition of the urine, and which are not bed patients, the urine is not to be again examined unless requested by the pathologist or by the medical officer in charge. In pathological urine, and in the case of all bed patients, the urine is to be examined once a week unless in case of emergency a more frequent examination is considered necessary by the medical officer in charge of the case.

"*Examination of sputum.*—The sputum of every case showing pulmonary symptoms or in which a diagnosis of tuberculosis has been made, will be submitted for examination as often as the medical officer in charge of the case directs, or the pathologist requests.

"*Examination of feces.*—The feces of every case suffering from chronic diarrnea or dysentery will be submitted to the pathologist for examination at least once, and as often thereafter as he or the medical officer in charge may direct.

"*Use of examination blanks.*—A combined pathological blank which is attached to the clinical history is to be filled out for the first examination of each case; requests for reexamination should be made out upon a separate blank furnished for that purpose, which may be obtained at the laboratory.

"Wherever possible the clinical diagnosis will be verified by the pathologist, as in cases of pulmonary tuberculosis, malaria, amœbic dysentery, etc., and wherever such confirmation can not be obtained the fact will be stated on the diagnosis card.

"The pathological blank must be filled out and be accurate in every detail before being sent to the pathologist, special attention being paid to remarks concerning previous attacks of typhoid or malarial and as to clinical diagnosis and prominent symptoms. The report, when returned to the ward officer, should be filed with the clinical history.

"Specimens of urine, feces, sputum, etc., must be accompanied by the proper slip securely fastened to the bottle so that identical cases may be assured; these will be sent to the laboratory not later than 11 o'clock a. m., except in cases of emergency.

"All cases entering this hospital with a diagnosis of malarial fever, malarial cachexia, or in which malarial infection is suspected, should not have the blood examined until at least a week has elapsed after entry, unless active symptoms are present before that time. Quinine should not be administered to any such case until the blood has been examined and the diagnosis confirmed by the pathologist, except in pernicious cases, or where for some complication quinine is necessary.

"The chief nurse is charged with the duties usually devolving on the superintendent of nurses in civilian hospitals. She renders to the executive officer a daily report, 'Morning report of female nurses.'"

*Morning report of female nurses.*[*]

U. S. ARMY GENERAL HOSPITAL,
*Presidio of San Francisco, Cal., ............1900.*

| Present and absent. | | | | | | | | Alterations since last report. | | | | | | Duties of nurses. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Present. | | | Absent. | | | | | Gain. | | | Loss. | | | | | | | |
| For duty. | Sick. | Total. | With leave. | Without leave. | Total. | Total present and absent. | Present and absent last report. | By contract. | By transfer. | Total. | By annulment of contract. | Transferred. | Total. | Chief nurse. | Ass't C. nurse. | Ward duty. | Special duty. | Not assigned. |
| | | | | | | | | | | | | | | | | | | |

...............
*Chief Nurse.*

---

[*] All changes to be accounted for by name in this space, together with number, source, and date of order.

The mess department of the general hospital is under the supervision of a mess officer, who has under his immediate charge 1 hospital steward, 1 acting hospital steward, 4 civilian employees, and 27 privates of the Hospital Corps. It includes all kitchens and dining rooms for patients and for the Hospital Corps, the bakery, and supply storeroom.

Diets for patients are prepared in two kitchens according to an established bill of fare (General Orders, No. 28, July 13, 1900, being the latest diet table formulated for use at this hospital). In addition a daily order list of special diet with a supplementary list is provided for the use of ward surgeons for special cases. Copies of full and light diet table, special diet, diet order, and daily order lists are appended.

The following full and light diet table has been adopted as the standard of diet; it displaces a diet table of earlier date, a change in the table having been found advisable:

### General Orders, No. 28.

United States Army General Hospital,
*Presidio of San Francisco, Cal., July 13, 1900.*

The following full and light diet tables are hereby ordered for this hospital and will be adhered to as far as practicable. Deviations must be reported by the cook to the officer in charge of the kitchens. General Orders, No. 21, December 28. 1899, is hereby revoked.

FULL DIET.

| Breakfast. | Dinner. | Supper. |
|---|---|---|
| *Sunday.* | | |
| Oatmeal and milk.<br>Ham and eggs.<br>Bread and butter.<br>Fruit.<br>Coffee. | Vermicelli soup.<br>Roast veal, sage dressing, or<br>Turkey or chicken and dressing.<br>Stewed peas. Mashed potatoes.<br>Farina pudding. Fruit.<br>Bread and butter. Coffee. | Veal stew or boiled ham.<br>Apple sauce.<br>Cake.<br>Bread and butter.<br>Tea. |
| *Monday.* | | |
| Germea and milk.<br>Beefsteak.<br>Fried potatoes.<br>Bread and butter. Fruit.<br>Coffee. | Roast beef.<br>Mashed potatoes. String beans.<br>Tapioca pudding.<br>Bread and butter. Fruit.<br>Coffee. | Codfish balls or hash.<br>Bread and butter.<br>Pickles.<br>Jam. Sweet crackers. Prunes.<br>Tea. |
| *Tuesday.* | | |
| Oatmeal and milk.<br>Sausage.<br>Fried potatoes.<br>Bread, butter, coffee.<br>Fruit. | Vegetable soup.<br>Baked pork and beans.<br>Baked tomatoes.<br>Bread pudding.<br>Bread, butter, cocoa, fruit. | Fried liver and bacon.<br>Corn bread and sirup or<br>Biscuits.<br>Bread, butter, tea.<br>Fruit. |
| *Wednesday.* | | |
| Milk toast.<br>Beefsteak.<br>Bread, butter, coffee.<br>Fruit. | Roast mutton with dressing.<br>Mashed potatoes.<br>Corn or fresh vegetables.<br>Chocolate pudding. Fruit.<br>Bread, butter, coffee. | Mutton stew.<br>Pickles. Sweet crackers.<br>Bread, butter, tea.<br>Peach cobbler. |
| *Thursday.* | | |
| Germea and milk.<br>Hash.<br>Bread, butter, coffee.<br>Fruit. | Oyster soup.<br>Corned beef and cabbage.<br>Boiled potatoes. Radishes.<br>Rice pudding. Fruit.<br>Bread, butter, coffee. | Sliced roast beef.<br>Macaroni and cheese.<br>Preserves.<br>Bread and butter.<br>Tea. |
| *Friday.* | | |
| Oatmeal and milk.<br>Bacon and eggs.<br>Bread, butter, coffee.<br>Fruit. | Baked fish with sauce.<br>Plain boiled potatoes.<br>Fresh salad.<br>Farina pudding. Fruit.<br>Bread, butter, cocoa. | Salmon salad. Potato salad.<br>Apple sauce.<br>Ginger crackers.<br>Bread and butter.<br>Tea. |
| *Saturday.* | | |
| Germea and milk.<br>Beefsteak.<br>Fried potatoes.<br>Bread, butter, coffee.<br>Fruit. | Roast beef, veal, or pork.<br>Mashed potatoes.<br>Hot slaw. Cauliflower.<br>Bread pudding.<br>Bread, butter, coffee. | Baked hash or stew.<br>Stewed prunes.<br>Assorted cakes.<br>Bread and butter.<br>Tea. |

LIGHT DIET.

| | | |
|---|---|---|
| *Sunday.* | | |
| Oatmeal and milk.<br>Soft boiled eggs.<br>Milk toast. Coffee. | Rice soup.<br>Farina pudding.<br>Coffee. | Milk toast.<br>Cup custard.<br>Tea. |
| *Monday.* | | |
| Germea and milk.<br>Milk toast.<br>Boiled eggs.<br>Coffee. | Plain tomato soup.<br>Bread pudding with lemon sauce.<br>Coffee. | Farina mush and milk.<br>Sweet crackers. Jelly.<br>Toast.<br>Tea. |

LIGHT DIET—Continued.

| Breakfast. | Dinner. | Supper. |
|---|---|---|
| *Tuesday.* | | |
| Oatmeal and milk.<br>Boiled eggs.<br>Coffee. | Barley soup.<br>Tapioca pudding.<br>Cocoa. | Biscuits or corn bread.<br>Maple sirup. Boiled rice.<br>Milk toast and tea. |
| *Wednesday.* | | |
| Oatmeal and milk.<br>Soft boiled eggs.<br>Coffee. | Consomme vermicelli.<br>Cornstarch pudding.<br>Vanilla sauce. Coffee. | Sweet crackers. Jam.<br>Milk toast.<br>Tea. |
| *Thursday.* | | |
| Germea and milk.<br>Boiled eggs.<br>Coffee. | Oyster soup.<br>Rice pudding.<br>Coffee. | Macaroni and cheese.<br>Milk toast. Maple sirup.<br>Tea. |
| *Friday.* | | |
| Oatmeal and milk.<br>Boiled eggs.<br>Milk toast.<br>Coffee. | Fish chowder.<br>Farina pudding.<br>Cocoa. | Tapioca pudding.<br>Milk toast. Ginger crackers.<br>Boiled eggs.<br>Tea. |
| *Saturday.* | | |
| Oatmeal and milk.<br>Boiled eggs.<br>Coffee. | Vermicelli soup.<br>Sago pudding.<br>Coffee. | Germea mush.<br>Assorted cakes. Jelly.<br>Milk toast.<br>Tea. |

By order of Major Girard:

C. C. COLLINS,
*First Lieutenant and Assistant Surgeon, U. S. A., Executive Officer.*

In addition to the regular diet table a special diet list is provided for use of ward surgeons for cases requiring this class of diet; it also contains a list of broths intended for liquid diets.

*Daily order list of special diet.*

U. S. A. GENERAL HOSPITAL,
Ward ...... *Presidio of San Francisco, ............, 1900.*

| | B. | D. | S. | | | |
|---|---|---|---|---|---|---|
| No. of light diets .......................... | | | | | | |
| No. of full diets.......................... | | | | | | |
| Stewed chicken .......................... | | | | | | |
| Chopped beef.......................... | | | | | | |
| Steaks .......................... | | | | | | |
| Mutton chops.......................... | | | | | | |
| Baked potatoes .......................... | | | | | | |
| French-fried potatoes .......................... | | | | | | |
| Saratoga chips.......................... | | | | | | |
| Creamed potatoes .......................... | | | | | | |
| Baked apples .......................... | | | | | | |
| Wine jelly .......................... | | | | | | |
| Cup custard .......................... | | | | | | |
| Milk toast .......................... | | | | | | |
| Poached eggs.......................... | | | | | | |
| Coffee .......................... | | | | | | |
| Tea .......................... | | | | | | |
| BROTHS. | | | | | | |
| Beef broth.......................... | | | | | | |
| Mutton broth.......................... | | | | | | |
| Chicken broth.......................... | | | | | | |
| Consomme broth .......................... | | | | | | |
| Oyster broth.......................... | | | | | | |

...............
*Ward Officer.*

Accompanying the special diet list ward surgeons present a diet order, showing the number of diets in ward in classified order. This order also requires the number of loaves of bread needed for patients dieting in ward to be stated, in order to prevent any shortage as well as an excess of bread being sent to the wards.

*Diet order.*

Ward ...... ............., 1900.

Liquid diets ......

Special diets ......

Light diets {In ward. In mess hall.

Full diets {In ward. In mess hall.

| | Breakfast. | Dinner. | Supper. |
|---|---|---|---|
| Number of loaves of bread required for diets in ward ............................. | | | |

Form 55. ................, *Ward Officer.*

The articles required by wards on the daily order list include all such as need no preparation in the diet kitchen. They are issued direct, on the order of the ward surgeons, from the mess storeroom.

*Daily order list.*

Ward ......
No. of patients ......

U. S. A. GENERAL HOSPITAL,
*Presidio of San Francisco,* ............., *1900.*

| Articles. | Quantity. | $ | Cts. | Articles. | Quantity. | $ | Cts. |
|---|---|---|---|---|---|---|---|
| Apples, fresh..........No.. | | | | Nutmegs...............oz.. | | | |
| Apricots.............cans.. | | | | Oatmeal, H. O.........pks.. | | | |
| Arrowroot ...........tins.. | | | | Oranges ..............No.. | | | |
| Bananas ..............No.. | | | | Oysters, fresh ........tins.. | | | |
| Beer .................bots.. | | | | Oysters, cove........cans.. | | | |
| Beef extract..........tins.. | | | | Peaches.............cans.. | | | |
| Biscuits, assorted .cartons.. | | | | Pears ...............cans.. | | | |
| Catsup...............bots.. | | | | Pepper ..............tins.. | | | |
| Chocolate............lbs.. | | | | Pickles..............bots.. | | | |
| Clam bouillon .......bots.. | | | | Pine apples .........cans.. | | | |
| Cocoa.................lbs.. | | | | Salt...................lbs.. | | | |
| Corn starch .........pkgs.. | | | | Sardines.............tins.. | | | |
| Crackers, sweet .......lbs.. | | | | Sauce, cranberry ....tins.. | | | |
| Crackers, soda........box.. | | | | Sauce, Worcestershire. bots | | | |
| Crackers, snowflake..box.. | | | | Sugar, granulated ....lbs.. | | | |
| Eggs.................doz.. | | | | Syrup................tins.. | | | |
| Farina ................lbs.. | | | | Syrup, maple ........tins.. | | | |
| Ginger ale ...........bots.. | | | | Tea, E. B............ozs.. | | | |
| Ginger snaps..........lbs.. | | | | Vanilla extract......bots.. | | | |
| Grapes ...........baskets.. | | | | Vinegar ...............qts.. | | | |
| Honey ...............jars.. | | | | Water, mineral, Shasta bots | | | |
| Horse-radish.........bots.. | | | | Waters, mineral, Apols. bots | | | |
| Jam...............glasses.. | | | | Electro silicon.....boxes.. | | | |
| Jelly ..............glasses.. | | | | Fly paper .........sheets.. | | | |
| Jelly, currant .........tins.. | | | | Gold Dust...........pkgs.. | | | |
| Lemons ...............No.. | | | | Lye ...................cans.. | | | |
| Lemon extract ......bots.. | | | | Matches ...........boxes.. | | | |
| Milk, condensed .....tins.. | | | | Soap, Castile ........bars.. | | | |
| Milk .................gals.. | | | | Soap, common ......bars.. | | | |
| Milkine..............bots.. | | | | Soap, Ivory..........bars.. | | | |
| Mushrooms..........cans.. | | | | Sapolio ............cakes.. | | | |
| Mustard, French.....bots.. | | | | Melons ...............No.. | | | |

................, *Ward Officer.*

Fresh fruits, apricots, peaches, plums, pears, berries, etc., will be furnished on this order, as required, during season. Orders for berries must be given 24 hours in advance.

This blank will be filled out each day with number and quantity of various articles wanted and will be sent to the steward in charge of the storeroom.

There are two kitchens for patients. The kitchen at the general hospital contains a large double French range for cooking, a large hot water tank is connected to it, giving the kitchen and scullery connected therewith a supply of hot water independent of source of general supply for the hospital. A diet pantry and storeroom is attached, and an elevator, recently added therein, conveys bread from the bakery below, as required for use in this kitchen and dining room. A number of improvements are now being made, by the installation of a complete set of steam kettles for meats and vegetables and a set of urns on a steam table for coffee, tea, hot milk, and water. In the vegetable and meat basement connected with this kitchen a cold storage room has recently been added which will enable the hospital to preserve its foods at a moderate cost. All diets that may be required for patients (full, light, and special) are prepared in this kitchen. They are sent to the wards in special rubber-tired carts designed for this purpose. The food being placed on trays and covered with vessels, a door being provided in each cart, further prevents loss of heat from food while being conveyed from kitchen to ward.

An acting hospital steward is in immediate charge of the kitchen and dining room connected therewith, and a force of 9 men, 7 privates of the Hospital Corps, and 2 civilians are employed. Their duties are as follows: The chief cook cuts all meats and generally supervises the preparation of all foods. He requires from the storeroom each morning before 9 o'clock the articles of food wanted for the next twenty-four hours. Second cook makes puddings, custards, broths, etc., and prepares all light diets. Third cook prepares all meats and potatoes and assists in general cooking at range. Fourth assistant prepares vegetables, does broiling of steaks, and attends to short orders. Fifth assistant prepares coffee, tea, or cocoa; also attends to policing and care of vegetable storeroom and carries fuel for ranges. Sixth and seventh assistants are pan and dish washers at sink. Eighth assistant, general police and at sink; attends to police of woodwork and window cleaning, also assists in the preparation of vegetables. Ninth man in charge of diet pantry; consolidates diet orders from wards to special blanks for the information of the chief cook in preparing diets; keeps accounts of articles of food used from diet pantry; reports to chief cook articles of food required in diet kitchen each day; supervises the placing of food in ward carts, being responsible that no error occurs, also care and police of kitchen storeroom.

The forms below are those used in kitchen. The daily order list is used as a requisition on mess storeroom for such supplies as are required during the day. On the diet calendar is copied all data from the diet orders and special diet lists from each ward, with the object of giving the chief cook the orders for the day in consolidated form for ready reference.

*Daily order list, diet kitchen.*

U. S. ARMY GENERAL HOSPITAL,
Total No. of diets ...... *Presidio of San Francisco, ............., 1900.*

| Amounts. | Articles. | $ | Cts. |
|---|---|---|---|
| | | | |

*Diet calendar for kitchen.*

U. S. ARMY GENERAL HOSPITAL.
*Presidio of San Francisco, Cal., ............., 1900.*

| Wards. | Liquid. | Light. | Full. | Special. | Mess. | No. of patients. |
|---|---|---|---|---|---|---|
| A | | | | | | |
| B | | | | | | |

In the patients' dining room and scullery connected therewith, five privates of the hospital corps and as many convalescent patients as may be required, are employed. On account of distance of kitchen from dining room and the size of the dining room itself, it is desirable to have two men wait at each table; this to avoid any delay in supplying the wants of patients. The food is brought from the diet kitchen to the dining room in carriers, and is then distributed. The dining room contains 10 tables, with a capacity of 20 patients to each table; the number of tables could be readily increased to 14 should the requirements of the hospital necessitate this increase. Hours for meals are as follows: Breakfast, 7.30 a. m.; dinner, 12.30 p. m.; supper, 5.30 p. m. The doors of the dining room are opened at the sounding of mess call. Each patient as he passes in presents a meal ticket to an attendant stationed at the door for this purpose. These tickets are counted and the wards checked after each meal. The number of tickets received from each ward is entered on the attached form, which is then compared with the number of patients reported for mess hall on the diet orders of the respective wards. A check is thus maintained and the surreptitious feeding of expatients and others, a standing evil which is always to be contended against, is prevented.

U. S. A. GENERAL HOSPITAL.

PRESIDIO OF SAN FRANCISCO, CAL.

Date............1900.

BREAKFAST
DINNER
SUPPER

Indicate proper meal by crossing off the other two.

| | | | |
|---|---|---|---|
| A | | F | |
| B | | G | |
| C | | H | |
| D | | I | |
| E | | J | |

I certify that this statement is correct as showing number of patients from each ward fed in dining room for this meal.

.................

*Lance Actg. Steward U. S. A., in charge of Dining Room.*

This slip to be turned in to the mess office after each meal.

The kitchen for the patients treated at the brick and wooden barracks, used as adjuncts to the hospital proper, is a company kitchen converted to use of the hospital. Food for 75 to 200 patients is prepared here. Its use as a diet kitchen is not thoroughly satisfactory; the cook range being too small for the requirements, as well as the kitchen itself. Only articles of full diet are prepared here. In it one civilian as cook and three privates of the hospital corps are employed. The cook is assisted at the range by a private of the hospital corps; two additional privates of the hospital corps attend to the general policing of the kitchen and basement connected therewith, the preparation of all vegetables and washing of dishes in use in the kitchen. They are assisted by such convalescents as may be required from time to time. One private of the hospital corps is in charge of the dining room; to assist him in his duties a number of convalescent patients are daily detailed. A convalescent meal ticket is used at this dining room with the same check system as at the new hospital.

The bakery employs one civilian as chief baker, with a salary of $50 per month, and one private of the hospital corps. All bread consumed by patients, hospital corps and female nurses, is made at the hospital bakery. Since its opening, August 10, 1899, 120,720 loaves of bread, at an average cost of 1.36 cents per loaf, have been baked and issued. Bread is issued from 7.30 a. m. to 8.30 a. m., and from 3.30 p. m. to 4.30 p. m. Issues are made by the baker on an order signed by the man in charge of dining room or kitchen. They are turned in to the mess storeroom each evening by the chief baker, who renders a report at this time on the amount of flour used and number of loaves of bread baked and issued during the day. Supplies are furnished to the bakery from the subsistence funds for patients, from the hospital corps and female nurses, in amounts proportionate to the cost of bread consumed by each organization. No savings are made from flour in bakery, and there are no bakery expenses except those for actual manufacture of bread, the civilian baker employed being paid by the Medical Department.

To supply the diet kitchen a general subsistence storeroom is kept and is under the immediate charge of the mess steward. All subsistence supplies for kitchens and wards are received and issued here. One lance acting steward and two privates of the hospital corps are employed in connection with this storeroom. A market wagon makes daily trips to the city for butter, eggs, and fruit. Supplies are purchased from the commissary of the general hospital and from various firms in San Francisco as required.

Bids are requested from firms for the various articles needed at short intervals. The supplies are received and checked from the bills delivered by merchants and at the close of each day are entered upon a daily report of expenditures, said report showing the total amount expended for the day.

*Daily report of expenditures for mess.*

U. S. ARMY GENERAL HOSPITAL, PRESIDIO OF SAN FRANCISCO, CAL.

Ending ............ 19..

| Articles. | Quantity. | Price. | Total. | Remarks. |
|---|---|---|---|---|
| Beef................ | | | | |
| Veal................ | | | | |
| Mutton.............. | | | | |
| Pork................ | | | | |
| Milk................ | | | | |
| Ice................. | | | | |
| Chicken............. | | | | |
| Bread............... | | | | |
| Commissary of subsistence............ | | | | |
| Sum total...... | | | | |

.................

Form 54. *Hospital Steward, U. S. Army.*

A morning report is prepared showing number of patients in hospital during day, and the allowance for same; a balance is then struck between the daily allowance and expenditures.

*Morning report, mess U. S. Army General Hospital.*

PRESIDIO OF SAN FRANCISCO, CAL., ............19..

| | | | | | | |
|---|---|---|---|---|---|---|
| Patients on diet. | Remaining last report. | | Financial statement. | Remaining from last report. | $ | cts. |
| | Gained. | | | Allowance for current day. | | |
| | Lost. | | | Total credit. | | |
| | Total remaining. | | | Expended. | | |
| Amount allowed at 40 cts. per man per day. | | | | Balance remaining. | | |

Remarks:

...............

Form 53. *Hospital Steward, U. S. Army.*

The supplies received for the day are then entered on an abstract of receipts, which is completed at the termination of each month. This abstract contains printed headings of all articles likely to be used in the hospital and ruled for daily entries.

*Abstract of purchases of food for the sick in the U. S. Army General Hospital, Presidio, S. F., Cal., for the month of ................*

| Date of purchase. | Apples. | Apples evaporated. | Allspice. | | | Bacon. | Baking powder. | Barley, pearl. | Bay leaves. | Beans, lima. | Beans, navy. | Beef. | Biscuits, assorted, tea. | Brains, calf. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Box.* | *Lbs.* | *Lbs.* | | | *Lbs.* | *Cans.* | *Lbs.* | *Lbs.* | *Lbs.* | *Lbs.* | *Lbs.* | *Tins.* | *No.* |
| On hand to be acc't for ............... | | | | | | | | | | | | | | |

Certain articles of diet not requiring preparation (milk, crackers, jellies, etc.), are issued to wards direct from this storeroom. Milk is required for by wards, direct to the storeroom on daily order lists. As these lists are received in the storeroom the amount of milk asked for thereon is entered in a designated column on a form "daily milk account," the total amount plus a small extra quantity for emergencies being taken.

*Daily milk account.*

U. S. ARMY GENERAL HOSPITAL,

*Presidio of San Francisco, Cal., ............, 1900.*

| Wanted. | | Delivered No. of gals. | | | To whom delivered. |
|---|---|---|---|---|---|
| Ward. | No. of gals. | a. m. | p. m. | Total. | Signature of person receiving milk. |
| A | | | | | |
| | | | | | |
| B | | | | | |

Issues are made on daily order lists signed by ward officers who designate the articles required for their patients. The number of patients in the ward is entered on the list. After issue the price of each article is entered and the total cost of issues with the number of patients for whom required entered on a card bearing name of ward and which has daily entries of cost per ward and number of patients therein for each month. The cost of articles issued to kitchens is also charged daily against each kitchen.

Articles after issue are entered on an abstract of issue roll which is completed and compared with the abstract of receipts on the last day of each month. An inventory of supplies on hand is then taken and the account closed for the month.

*Abstract of issues and expenditures of food for the sick in the U. S. Army General Hospital, Presidio, S. F., Cal., for the month of.............*

| Date of issue. | Apples. | Apples, evaporated. | Allspice. | | | Bacon. | Baking powder. | Barley, pearl. | Bay leaves. | Beans, lima. | Beans, navy. | Beef. | Biscuits, assorted tea. | Brains, calf. | Butter. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Box.* | *Lbs.* | *Lbs.* | | | *Lbs.* | *Cans.* | *Lbs.* | *Lbs.* | *Lbs.* | *Lbs.* | *Lbs.* | *Tins.* | *No.* | *Lbs.* |
| On hand to be acc't for.. | | | | | | | | | | | | | | | |

Experience has shown that under a system of fixed-diet table, special-diet table, and extra-order lists for ward use it is necessary to maintain a storeroom, keeping therein at least three days' supply of such nonperishable articles as may be required. Without such a storeroom a sudden contraction or expansion in the number of patients causes a financial stringency. The amount allowed, 40 cents per patient, is not sufficient for a sudden increase of patients requiring special diets, unless the regular-diet table is reduced at each influx; likewise it is not sufficient if the number of patients drop to 200 or below with a large number of special diets remaining as is usual. To obviate a continual change of diet tables, thereby enabling the maintaining of one standard of diet, a storeroom with supplies for 500 patients for three days must be maintained.

A storeroom renders an exact account of stores received possible. The receipt of stores direct into kitchens for immediate use is prone to cause confusion and errors and is detrimental to any attempt to systematize the accounts of a mess intelligibly.

The Hospital Corps is fed from a separate kitchen and a separate dining room. Four privates of the Hospital Corps are employed in the kitchen, one as cook, one as assistant cook, two as general police and in the preparation of vegetables. The dining room for the Hospital Corps is above the kitchen, the food being sent to dining room from kitchen by means of a small lift. In the dining room three privates of the Hospital Corps are on duty. About 125 Hospital Corps men are fed here on an average.

U. S. ARMY GENERAL HOSPITAL,
*Presidio of San Francisco, Cal.*

The following bill of fare is hereby ordered for the Hospital Corps and will be adhered to as far as practicable. Deviations must be reported by the cook to the officer in charge of the kitchens.

BILL OF FARE.

| Breakfast. | Dinner. | Supper. |
|---|---|---|
| *Sunday.* | | |
| Fried ham and eggs.<br>French fried potatoes.<br>Bread, butter, coffee. | Roast veal and gravy, with dressing.<br>Mashed potatoes, corn.<br>Cornstarch pudding.<br>Apple sauce.<br>Bread, butter, coffee. | Cold meat, potato salad.<br>Bread, coffee.<br>Apple pie. |
| *Monday.* | | |
| Oatmeal and milk.<br>Fried bacon.<br>Fried potatoes.<br>Bread, butter, coffee. | Vegetable soup.<br>Roast beef and gravy.<br>Boiled potatoes.<br>Stewed tomatoes.<br>Bread, coffee. | Beef stew.<br>Stewed prunes.<br>Bread, butter, coffee. |
| *Tuesday.* | | |
| Biscuits.<br>Meat and gravy.<br>Butter, coffee. | Vermicelli soup.<br>Roast mutton.<br>Mashed potatoes.<br>Turnips, coffee, bread. | Cold meat.<br>Fried potatoes.<br>Rice pudding.<br>Bread, coffee. |
| *Wednesday.* | | |
| Beefsteak.<br>Hot cakes, syrup.<br>Coffee. | Bean soup.<br>Roast beef and gravy.<br>Boiled potatoes, peas.<br>Coffee and bread. | Cold meat.<br>Fried potatoes.<br>Apple pie.<br>Bread, coffee. |
| *Thursday.* | | |
| Oatmeal and milk.<br>Meat and gravy.<br>Fried potatoes.<br>Bread, butter, coffee. | Vegetable soup.<br>Baked beans, bacon.<br>Bread, coffee. | Hash, baked.<br>Sago pudding, prunes.<br>Bread, butter, coffee. |
| *Friday.* | | |
| Biscuits.<br>Beefsteak and gravy.<br>Potatoes.<br>Butter and coffee. | Vegetable soup.<br>Baked fish.<br>Mashed potatoes.<br>Lima beans.<br>Bread and coffee. | Cold meat.<br>Potato salad.<br>Stewed apples.<br>Bread, coffee. |
| *Saturday.* | | |
| Oatmeal and milk.<br>Cold meat and gravy.<br>Bread, butter, coffee. | Vermicelli soup.<br>Roast beef.<br>Macaroni and cheese.<br>Bread and coffee. | Meat and gravy.<br>Fried potatoes.<br>Rice pudding.<br>Bread, coffee. |

The hospital fund has no source of revenue at this hospital, except from savings of rations and such small sums as may be gained from the feeding of sick officers who are messed from the kitchen of the Hospital Corps. In this the Hospital Corps detachment on duty at this hospital is under a decided disadvantage as compared with company organizations and post hospitals who enjoy the advantages of such benefits as accrue to hospital and company funds by a well-directed post exchange.

## REPORT ON THE WORK DONE IN THE BACTERIOLOGICAL LABORATORY OF THE UNITED STATES ARMY GENERAL HOSPITAL, SAN FRANCISCO, CAL., BY ACTING ASST. SURG. CHARLES F. CRAIG, PATHOLOGIST TO THE HOSPITAL.

I have the honor to submit a report of the work done in the bacteriological laboratory of this hospital for the period July 1, 1899, to June 30, 1900.

Prior to October 4, 1899, when I took charge of the routine pathological work of the hospital, the following examinations had been made by Acting Assistant Surgeon Ames:

Total number to October 4, 1899, 614, divided as follows:

1. Examinations of blood, 256. Of these examinations 91 gave a positive reaction to the Widal test and 15 proved positive for the malarial parasites. Of the 15 positive malarial cases 11 showed the tertian parasite, 3 the æstivo-autumnal parasite, and 1 the quartan parasite.
2. Examinations of urine, 132.
3. Examinations of sputa, 87. Of these, 16 showed the presence of the tubercle bacillus.
4. Examinations of cultures for Klebs-Lœffler bacillus, 65. Of these, 32 proved positive.
5. Examinations of fæces, 30. Of these, 6 showed the presence of the amœba coli.
6. Miscellaneous examinations, 44.

Of the 91 positive Widal tests a large number were reexaminations.

From October 4, 1899, when I was assigned to duty here, to June 30, 1900, the total number of examinations made has been 5,574. These examinations may be divided as follows:

| | |
|---|---:|
| A. Examinations of blood | 2,464 |
| B. Examinations of urine | 2,071 |
| C. Examinations of sputa | 496 |
| D. Examinations of fæces | 313 |
| E. Examinations of cultures | 46 |
| F. Examinations of post-mortem material | 159 |
| G. Miscellaneous examinations | 25 |
| Total | 5,574 |

(A) Examinations of blood. These may be divided as follows:

1. For the parasites of malaria and leucocytosis, 1,891.
2. For the Widal test, 561.
3. For the estimation of the number of blood cells, 12.

1. Of the 1,891 examinations of the blood for the parasites of malarial fever, 264 proved positive and 1,627 negative. This large negative result is due to the fact that the blood of every case admitted to the hospital is examined whether malarial fever is suspected or not. Hardly any of the negative cases were diagnosed as malarial fever, although many had been diagnosed as "malarial cachexia;" but repeated examinations of the blood of most of these cases resulted negatively, and the cases were found to be suffering from chronic dysentery or diarrhea.

Of the 264 positive cases 134 were found to be infected with the tertian malarial parasite (18 being double tertian infections), 100 with the æstivo autumnal parasites, 27 with both tertian and æstivo autumnal parasites, and 3 with quartan parasites.

The tertian infections were mostly contracted in this country and the Philippine Islands, and proved very amenable to treatment. The æstivo autumnal infections were much more resistant to treatment, but I have yet to see one which has not yielded to quinine when properly given, although, of course, exacerbations of the disease often occurred if the quinine was discontinued. In fact, it is very difficult to determine when any case of malarial fever is actually cured, as is evidenced by the recurrence of the disease in so many cases after weeks or even months in uninfected localities. In one case in which tertian parasites were found in the blood, it had been months since the last attack of malaria, and quinine had been taken steadily up to a week before the attack, when it was stopped. After only a week's absence of quinine the disease recurred, thus proving how resistant malarial infections can be to treatment, and that no active symptoms may show for months under quinine, but its withdrawal may be promptly followed by such symptoms.

I have been able to confirm in the æstivo-autumnal cases the occurrence of two varieties of the parasites causing the disease, and will submit a detailed report as soon as possible concerning this subject.

Three cases of quartan-malarial fever have been observed, one of which was of more than usual interest, showing numerous nearly full-grown quartan-malarial parasites in the blood, characterized by the coarse, immotile pigment, clear outline, and the shrunken condition of the infected corpuscles and their olive-green color. This man had been in the hospital since November 19, 1899, and had never had any distinct malarial symptoms or any paroxysm. Despite this, his blood contained full-grown quartan parasites in goodly numbers. The case is of interest, as showing how the blood may contain numerous parasites, although there are no clinical symptoms produced by them. It also shows how important an examination of the blood is, and how little clinical signs can be relied upon in diagnosing certain cases of malarial fever. In time, when the organisms became sufficiently numerous, this case would undoubtedly have developed symptoms, but the microscopical examination of the blood made it possible to apply the proper treatment before the clinical appearance of the disease, and thus saved the patient much discomfort.

Another case is also of interest, both because of the type of the disease and the great resistance of the infection to quinine. The patient entered the hospital November 3, 1899, with the history of a chill every four days. The blood contained numerous hyaline and half-grown quartan parasites. Quinine was given in large doses. His symptoms disappeared, as did the parasite from the blood. After about three weeks the quinine was discontinued and the elixir of iron, quinine, and strychnine substituted. In a few days he developed symptoms, and on December 11, 1899, his blood was examined and numerous half-grown quartan parasites found. Quinine was at once given in 15-grain doses once a day. The patient improved, and it was thought safe to discontinue the quinine on January 4, 1900. Next day the patient had a chill and numerous quartan parasites were found in his blood.

It will be seen from the foregoing that after reducing quinine and finally substituting the elixir of iron, quinine, and strychnine the patient had slight symptoms and the parasites were found in the blood. The symptoms disappeared, and also the parasites when large doses of quinine were again administered, and as long as the patient continued taking 15 grains of quinine a day he remained well. However, on stopping the quinine for only two days, after having taken it nearly a month, he had a severe paroxysm and numerous parasites were found in the blood. I believe that this is the first case of quartan-malarial fever on record which has proven so resistant to quinine, for, as a rule, quartan-malarial fever is very amenable to treatment. The case is of general interest as showing how long the malarial parasite may remain dormant, apparently disappearing, only to reappear when quinine is discontinued, and how important it is to continue the administration of the drug for weeks after all symptoms have ceased. Since January 6 he has had another exacerbation, due to the withdrawal of quinine.

The occurrence of these three cases of quartan fever has given me an excellent opportunity of studying this interesting and rare variety of the malarial parasite. Of over 1,500 cases of malaria, the blood of which I examined and the records of which I have preserved, only 10 cases of quartan fever were observed. The quartan parasite, on account of its rarity, has not been as often and as accurately studied as either the tertian or æstivo-autumnal parasite. Its cycle of development, as is well known, occupies seventy-two hours. The first form of the organism seen in the blood is a small hyaline disk, very minute and actively amœboid. Although these bodies are generally believed to be indistinguishable from similar tertian parasites, I believe that the quartan-hyaline body is more sharply cut and refractive than the tertian, while the invaded corpuscle is of a more greenish hue. In a few hours these small hyaline organisms have grown larger, are less actively amœboid, and a few granules of dark-brown pigment may be seen within them, generally at the border of the organism. The shape of the organism is either round or triangular, the amœboid motion being very sluggish. The pigment is motionless. I have never seen a pigmented organism which was actively amœboid. The organism is sharply outlined and refractive, while the invaded corpuscles are greenish in color and not swollen. Even at this early stage I believe it is possible to distinguish this form from the tertian parasite, which is dim of outline, of irregular bizarre shape, with active pigment, and inhabiting a pale, swollen corpuscle.

In twenty-four hours the distinguishing features of the quartan parasites are fully developed. The organism is sharply cut and looks often as though it were stamped into the blood corpuscle; is refractive, and its protoplasm often presents a peculiar, finely granular appearance; the pigment is dark brown in color, in the form of rather coarse granules, and is generally collected around the edge of the organism, sometimes forming almost a complete wreath around it; the pigment is absolutely motionless. The shape of the organism at this stage of development is usually triangular, ovoid, or round, and is not amœboid. The invaded corpuscle is smaller than the healthy ones, and is of a darker green color. All these characteristics clearly distinguish the quartan form from the tertian parasite, which is less sharply cut and refractile, is more or less amœboid, very irregular in outline, possessing lighter brown, more finely granular pigment, which is always motile, while the infected corpuscle is pale and often greatly swollen.

At the end of thirty-six hours all the phenomena noted are more pronounced, the organism filling about two-thirds of the corpuscle, which seems to be retracting about it. The pigment is increased in amount, but is motionless and collected in rough masses at the border of the organism, which is not amœboid. The growth of the organism from this time on is very slow, and it is not until a few hours before segmentation that the full-grown bodies are observed. Such an organism is circular in shape, bordered by a thin greenish layer representing the remains of the infected corpuscle, with numerous clumps of dark-brown motionless pigment, not only entirely confined to the periphery of the organism, but scattered through it, the protoplasm of the organism being finely granular in appearance. In many instances segmentation was seen to take place even before the corpuscle was entirely destroyed, the pigment collecting toward the center of the organism and six or more segments appearing within the corpuscle. Most commonly, however, the pigment in the full-grown parasites collects at the center in a solid, almost black, mass, and about the same time all trace of the infected corpuscle disappears, the organism being apparently extracellular. In a short time radial striations are observed shooting out from the central pigment, and these joining at their extremities form from six to fourteen oval segments. As a rule, the number of segments does not exceed ten. They are arranged regularly at first around the central pigment, forming the so-called "marguerite forms," but soon they begin to separate and disappear, the pigment at the same time disintegrating and becoming diffused. The number and the beautifully regular arrangement of the segments would alone serve to distinguish this stage of the quartan from the corresponding tertian parasite, but the quartan segments are also more oval in shape, more refractile, and somewhat larger. The star-like arrangement of the pigment between the segments, which Thayer considers as so characteristic, is generally observed, but I have seen exactly the same arrangement of pigment in tertian segment forms. It is probably simply an accidental occurrence, doubtless more common in the quartan parasite, but not at all peculiar to it.

The pigment in the quartan organism is only motile in the very young forms, is always dark brown in color, and occurs in round granules or in irregular masses of such granules. It generally occupies the periphery of the organism and tends to become collected at one portion, but in the full-grown parasites the granules and blocks of pigment are scattered throughout the protoplasm.

The outline of the quartan parasite, especially after the first twenty-four hours, is always very sharply cut, and appears as though stamped into the corpuscle. The shape of the organism is either round, oval, or triangular, and only in the very early hours of its development does it send out amœboid processes of any size. Later the amœboid movement consists of a gentle, sluggish undulation of the periphery of the organism, but even this ceases after the first thirty-six hours.

The protoplasm is refractive and often, on close inspection with a good light and a high power, a peculiar, finely granular appearance is noted, which has been mentioned. This, together with the sharply cut outline and blocks of pigment, brings to mind very forcibly the similar appearance of the ovoid bodies and crescents of the æstivo-autumnal parasites. Indeed, the organism during every stage of its development resembles much more closely the tertian æstivo-autumnal parasite as it occurs in splenic blood than it does the ordinary tertian organism. The corpuscles which are invaded by the quartan parasites are invariably somewhat shrunken and greener in color than the healthy corpuscles, but are not often crenated.

From this résumé of the characteristic features of the quartan parasite, as it has been observed here, it will be seen that it can be easily distinguished from the ordinary tertian type by its cycle of development covering about seventy-two hours; by its smaller size; sharply cut, more regular outline; refractive, finely granular protoplasm; motionless darker brown pigment, collected peripherally; lack of or very sluggish amœboid motion; smaller number of segments, which are more refractive, oval in outline, and more easily distinguished.

During the past four months I have had the opportunity of completing certain observations upon the flagellated forms of the malarial parasites, which, by the courtesy of the Surgeon-General, have been published in the New York Medical Journal for December 23, 1899. A brief review of the conclusions arrived at follows:

From the observations made I believe that there occur in the blood of cases of tertian, and especially in the blood of the æstivo-autumnal fever, two forms, or perhaps varieties, of the flagellated malarial organism.

The following method is most useful in obtaining flagellated bodies: The finger or ear is carefully cleansed with alcohol, as also the slides and cover glasses. Either the finger or lobe of the ear is compressed. A puncture is made with a sterile needle, and the first drop of blood wiped away. The second drop remains exposed until the slide is gently breathed upon, when the tip of the drop is pressed upon the side of the slide which has been thus moistened. The cover glass is then immediately placed over it and the preparation is ready for examination. The slight exposure of air and the small amount of moisture upon the slide seems to hasten exflagellation, since specimens so prepared almost invariably contain flagellated bodies. The two forms of flagellated parasites above referred to are designated as the active and passive flagellated plasmodium. The active form is the most common form found in the blood of tertian malarial fever. It is also found in æstivo-autumnal fever, but in this condition varies somewhat in morphology in unessential particulars. The chief facts to be noted in reference to the active form are the extreme activity of the pigment in the parasite prior to flagellation and during the time the flagella remain attached to it, the clubbed extremity of the flagella and the separation and constant individual existence of the flagella, and their power of individual and progressive movement in the blood. While the passive flagellated plasmodium is more common in æstivo-autumnal fever than in the tertian malaria, not every case shows flagellated organisms. They will only be found in the peripheral blood in those cases of fever showing crescents, for it is from the crescent that they develop. The points to be especially noted in the passive flagellated parasite are that the pigment does not become active and distributed throughout the plasmodium, the circular arrangement of the pigment, the absence of clubbed outer extremity to the flagella and the frequent presence at the juncture with the round body of a nodule which resembles exactly the clubbed outer extremity of the flagella of the active body. Instead of the rapid serpentine lashings of the flagella in the active form the movements in this form apparently consist in a rapid revolving upon their axes, the flagella sometimes pulling themselves loose from the round body and again becoming attached to it. In specimens in which the nodular swelling is not noted the pigment has a more rapid vibratory motion. These forms of malarial parasites represent the efforts of flagella which have been set free in the circulation to penetrate into the interior of the parasite represented by the round bodies just described.

In the light of the researches of McCallum, Thayer, and others, I believe that the passive flagellated bodies represent a phase of fertilization of the parasite probably having to do with its extra corporeal life.

The following observations upon the staining reactions of the parasites of malarial fever are of interest and are the result of experience gained in the examination of a very large number of stained specimens of malarial blood:

*The staining reactions of the tertian, quartan, and æstivo-autumnal parasites.*—There are many ways of staining the parasites of malarial fever, but a description of a few of the most useful is all that will be attempted at this time. The blood smears are prepared by carefully cleaning the lobe of the ear, puncturing it with a sterile needle or lancet, touching a clean cover glass to the resulting drop of blood, and placing another cover glass over it. The two are then slid very gently and carefully apart, and the smear allowed to dry. Care should be used not to get too much blood upon the first cover glass, and to use no pressure in sliding the glasses apart. After drying the smears are allowed to harden in equal parts of alcohol and ether for half an hour, when they are ready to stain. The plasmodia are stained by nearly all basic aniline dyes, but not by the acid dyes. For staining, I use either Romanowsky's or Chenzinsky's method, the latter preferably. Romanowsky's method is as follows: Two solutions are used—solution No. 1, a saturated aqueous solution of methylene blue; solution No. 2, a 1 per cent watery solution of eosin. The methylene-blue solution should be at least one week old. The staining solution is made fresh each time it is used, and consists of one part of the filtered methylene-blue solution added to two parts of the eosin solution and thoroughly mixed. The smears are placed face down upon this solution and allowed to stain from one-half to three hours or more. The best results are obtained after about two and a half hours' staining. By this method the red corpuscles are stained red by the eosin and the parasites a deep blue by the methylene blue. Romanowsky believed that the nuclear chromatin stained a violet color, but I have never been able to confirm his observations. Although very beautifully stained specimens can be secured by this method, I much prefer the method of Chenzinsky, for the reason that it gives a more natural appearance. By Romanowsky's method, and, in fact, by most methods, the coloring is very vivid, especially that of the red corpuscles by eosin, whereas in Chenzinsky's method the red corpuscles are stained more dimly, appearing almost natural in color, while the parasites are stained a fine blue, fully as well as by any other method.

Chenzinsky's method is as follows: A concentrated watery methylene-blue solution, diluted one-half with water, is added to an equal amount of a one-half per cent solution of eosin in 60 per cent alcohol. This solution is bottled and kept and improved in staining qualities by age. The specimens are stained with this solution for five minutes and then washed in water, dried, and mounted in Canada balsam. Much better specimens are obtained by staining for two hours or more, and I have secured very fine specimens by leaving the smears in the staining solution overnight.

There are numerous other methods of staining the malarial parasites, but these are the most satisfactory and useful.

A word as to the use of stained preparations for diagnostic purposes. I am aware that a few authorities use stained preparations almost entirely for diagnosis, but I believe that it is a cumbersome and very unreliable practice. Where it is impossible to keep a specimen of blood fresh enough to look at under the microscope the use of stained preparations is of course necessary; but where it is possible to examine the blood fresh it is always to be preferred, as it is infinitely more exact and satisfactory. I have seen many cases where the fresh blood showed numerous ring forms of the æstivo-autumnal parasites in which smears taken at the same time and stained most carefully showed either none or at most a very few dimly colored parasites. There is also the danger of mistaking stained granular matter or débris lying upon the corpuscles for the small æstivo-autumnal parasites in the smears, and this mistake can be very easily made by one who is unaccustomed to examining such preparations. The only strictly scientific way of diagnosing the various forms of the malarial parasites is by the microscopical examinations of the fresh blood, and after all most specimens of blood will keep in a suitable condition for examination under ordinary circumstances for six, eight, or even a greater number of hours, despite the text-book statements to the contrary.

The staining method devised by Futcher is to be recommended wherever speed is desirable in staining or where the fresh blood can not be examined and a speedy diagnosis is essential. It is as follows: The smears are hardened in a 1 per cent solution of formalin in 90 per cent alcohol for from a half to one minute. They are then dried and stained for from twenty to thirty seconds in the following solution of thionin, known as Marchande: Saturated solution of thionin in 50 per cent alcohol, 20; 2 per cent solution of carbolic acid, 100. The solution should stand several days before using. After staining the specimen is washed in water, dried, and mounted in Canada balsam. The red corpuscles are stained a very slight greenish hue, while the parasites are deep violet in color. Care should be used not to stain for too long a time, and also not to allow the formalin solution to act long, as it seems to cause a degeneration and vacuolization of the red cells. The method stains the æstivo-autumnal rings very satisfactorily.

*The staining reactions of the tertian and quartan malarial parasites.*—In properly stained preparations of the tertian and quartan parasites two distinct portions can be made out—a deeply staining ectoplasm and a dimly staining endoplasm. The endoplasm is really the nucleus of the parasite, and sometimes there can be seen, situated eccentrically between the ecto and endo plasm, a very deeply stained spot, the nucleolus, and this contains the greater part of the chromatin substance. These appearances are best observed in half-grown parasites which are not undergoing marked amœboid change of form. The ectoplasm contains the pigment. The nucleus is generally round or oval in shape and eccentric in situation. The very youngest tertian and quartan parasite is represented by a blue ring, the center of which is almost colorless. At some portion of the central colorless area and the blue-stained ring may often be seen a deeply stained dark-blue dot. Here we have the clearly differentiated ectoplasm stained blue, the endoplasm, or nucleus, almost unstained, and the deeply stained nucleolus. As the organisms grow, pigment granules appear in the ectoplasm, or stained portion, and by reason of the change of shape to the amœboid motion the central colorless nucleus is not easily made out, it being often situated in one of the pseudopodia. By reason of the amœboid changes in the shape of the parasites and the situation of the pseudopodia at different levels in the infected corpuscle it often appears as though there were two or more stained parasites within one corpuscle. In the stained ectoplasm both deeply and dimly stained areas can be distinguished. These occur without any regularity, and are probably due to different quantities of the stained protoplasmic substance collected at certain places. It will often be noticed that the extremities of the pseudopodia are stained much more deeply than other portions of the parasite. Very seldom is any pigment seen within the clear, almost unstained nucleus. Often, however, young forms are seen which stain almost uniformly throughout, no trace of a nucleus being visible.

As the parasites grow larger and approach full development, the distinction between the ectoplasm and the nucleus is gradually lost and is often represented simply by a more or less irregular, dimly stained area free from pigment. Often even this appearance is absent, and the parasite consists of a pretty uniformly stained pigmented mass of protoplasm. The small, deeply stained spot or nucleus always disappears before the parasite attains its full growth, and is by no means constant even in the young forms.

Just before segmentation, when the pigment has collected in a clump, the stained tertian or quartan parasite presents a peculiar dotted or mottled appearance, due to small, very deeply stained dots or spots scattered through the more deeply stained protoplasm of the parasite. As segmentation advances and the parasite begins to split up it will be seen that these darkly staining dots are in reality the nucleoli of small dimly stained rings or young tertian or quartan parasites, and correspond exactly to the young stained forms first described.

The pigment does not stain appreciably in well-prepared specimens, and the parasites which show the centrally situated clear, very dimly staining area or nucleus are always collected within the stained ectoplasm. This agrees well with the well-observed fact that in the fresh specimen the pigment granules are almost always collected at or near the periphery of the organism in its young pigmented stage.

*The staining reactions of the æstivo-autumnal malarial parasites.*—The staining reactions are similar, both for the quotidian and tertian æstivo-autumnal parasites.

The "ring forms" of the æstivo-autumnal parasites show a more or less deeply stained outer portion, a round or oval unstained central position, and a very deeply staining minute dot, situated at some point at the periphery of the stained ring. As the parasites grow, the endoplasm stains faintly and the distinction between it and the ectoplasm becomes less marked. The deeply staining dot disappears and just before segmentation the parasite stains a uniform blue throughout. The pigment granules, if present, are collected in the stained outer portion, in the half-grown parasites, and at or near the center just before segmentation. The individual segments stain, as do the intracorpuscular rings, the only difference being that they are smaller.

*Staining reactions of the crescents and ovoids.*—The crescent form of the æstivo-autumnal parasites presents many interesting staining phenomena. In those crescents in which the pigment is collected near the center the organism as a whole takes a rather dim blue color, the poles staining much more deeply, while the center, in which the pigment lies, is often unstained or but dimly stained. At each pole, as a rule, may be seen a very deeply stained semilunar portion extending to its periphery and covering the horns of the crescents. The appearance presented is that which would result had each horn of the crescent been dipped into a darker staining fluid and withdrawn. Between the dimly stained horns of the crescent and lying within the more dimly stained protoplasm are often seen very deeply stained round or oval spots irregularly distributed. In some crescents these deeply stained spots are very distinct and occupy a large part of the protoplasm of the crescent. As a rule the area in which the pigment lies and immediately surrounding it stains very faintly or not at all, but it is not rare to see a darkly staining belt or band passing through the center of the crescent, seeming to divide it into two parts. This appearance, however, is not common and does not by any means prove the dual nature of the crescent. Surrounding the crescent in the majority of instances is a narrow eosin-stained border, believed to be the remains of the red corpuscle in which the crescent was developed. This red-stained border does not always, however, entirely surround the crescent; sometimes it is only observed between the two horns, forming the so-called "bib;" sometimes it is absent there and present over the convex portion of the crescent; sometimes it can only be seen covering the horns of the crescent. It is often observed to be broken or ragged in outline and interrupted in places, thus suggesting the gradual disintegration of the red cell. Crescents are often observed which do not show any eosin-stained border, and in such cases we may assume that the destruction of the red cell is complete and the crescent is free in the blood plasm.

While the above description applies to the majority of stained crescents, many exceptions occur. Quite often crescents are observed stained uniformly throughout. Others do not present the deeply stained spots or polar staining; others stain very dimly at one pole and deeply at the other. In fact, it would be almost impossible to describe all the variations which may occur, but in the vast majority of examinations of stained crescents the description given will be found correct. There is no evidence in crescents of a nucleus.

The ovoid bodies stain exactly as do the crescents, so far as I have been able to observe, save that the polar staining is not so pronounced.

In studying the blood of soldiers returning from the Philippines and suffering from malarial fever I have noticed in several cases a peculiar form of the malarial parasite and which I have classified in reporting upon the cases as a tertian parasite, but which presents so many differences from the ordinary tertian parasite as to indicate that it is a distinct variety of the plasmodia.

I have invariably observed it in the blood of cases having tertian paroxysms, and always in large numbers. All stages of the parasite have been observed, from the hyaline disk to the segmenting bodies. It appears first as a very highly refractive circular hyaline disk, having a sharply cut outline and having absolutely no amœboid motion. The absence of amœboid motion differentiates it from all other young forms of the malarial parasites, and is, therefore, very distinctive. The hyaline disk is about one-fourth the size of the infected corpuscle, which is normal in size and appearance. I have never observed any "ring forms" of this hyaline stage.

In a few hours the hyaline disk has grown to about one-half the size of the corpuscle which contains it and has become pigmented. The pigment exactly resembles that found in the ordinary tertian parasite, being finely granular and motile and distributed unequally throughout the parasite. The parasite is perfectly circular in shape and devoid of all amœboid motion. The border of the parasite is very sharply defined and the protoplasm very refractive and sometimes finely granular. The infected corpuscle is unaltered in size or color and is not crenated or shrunken.

In about 38 to 40 hours the parasite has nearly filled the corpuscle containing it, and the amount of pigment has increased. The parasite is perfectly circular in shape and presents the same refractive protoplasm and sharply cut border; the pigment is sluggishly motile, reddish in color, and the shape of fine granules. The infected corpuscle is normal in size and color.

I have not as yet observed the presegmenting forms in the blood, but have seen several free segmenting forms. These are much smaller than the ordinary tertian segmenting forms, and the greatest number of segments observed has been ten. The segments are oval in shape or perfectly round, sharply cut and refractive. The pigment is usually collected in a solid reddish brown mass at the centre and is immotile.

From the description given it will be seen that this parasite differs markedly from the other known malarial organisms.

The following table will make this more plain:

### FROM THE TERTIAN PARASITE.

*Hyaline stage:*

1. Always circular in shape, while tertian is irregular and bizarre.
2. Absence of amœboid motion, while tertian is markedly amœboid.
3. Clear-cut and refractive, while tertian is indistinct and not refractive.
4. No change in infected corpuscle, while the tertian-infected corpuscle is often larger and more pale.

*Pigmented stage:*

1. Always circular in shape, while tertian is irregular.
2. Absence of amœboid motion, while tertian is amœboid in early stage.
3. Clear-cut outline and refractive, granular protoplasm, while tertian outline is less distinct and protoplasm is cloudy.
4. More sluggish motion of pigment.
5. No change in size, shape, or color of infected corpuscle, while in tertian the infected corpuscle is larger than normal and much more pale in color.

*Segmenting stage:*

1. Smaller number of segments and their more clearly cut outline.

### FROM THE ÆSTIVO AUTUMNAL PARASITE.

*Hyaline stage:*

1. Perfectly circular shape, while the æstivo autumnal parasites are often irregular.
2. Absence of "ring forms."
3. Absence of all amœboid motion.
4. Large size.
5. No change in infected corpuscle.

*Pigmented stage:*

1. Large size.
2. Greater amount of pigment and greater motillity of it.
3. No "ring forms."
4. Absence of all amœboid motion.
5. No change in infected corpuscles.

*Segmenting stage:*

1. Greater size of segments.
2. Larger amount of pigment.

### FROM THE QUARTAN PARASITE.

The differentiation of this parasite from the quartan organism is much more difficult than is the case with the tertian or æstivo autumnal parasites. Indeed, I first mistook them for quartan parasites until the clinical histories of the cases and certain peculiarities of the parasites caused me to study them more carefully. This organism is about the size of the quartan parasite, has the same clear-cut outline and refractive, finely granular protoplasm, and divides into about the same number of segments, but the following differences are to be noted:

*Hyaline stage:*

1. Perfectly circular shape; quartan irregular.
2. Absence of amœboid motion; quartan amœboid.

*Pigmented stage:*

1. Perfectly circular shape; quartan often triangular or ovoid.
2. Absence of amœboid motion; quartan amœboid at beginning of pigmentation.
3. Larger amount of and more finely granular pigment, irregularly distributed and motile; quartan has coarse pigment granules, arranged in a wreath-like manner around the edge of parasite, collected at one portion, and the pigment is absolutely motionless.
4. No change in infected corpuscles; corpuscles infected with the quartan parasite are usually smaller than normal and of a darker brown color.

Cycle development, 48 hours; quartan, 72 hours.

From the foregoing it will be seen that the two great points in which this parasite differs from all other malarial parasites is the retention of its perfectly circular shape through all stages of development and the absolute absence of all amœboid motion. These two phenomena have been present in all the cases in which I have observed the organism, about six in number. I believe that this parasite is either a distinct variety of the malarial plasmodia or that it is a tertian parasite which has acquired the characteristics described through some unknown condition of environment acting upon the development of the organism.

In closing this portion of my report I wish to call attention to the large number of cases of æstivo autumnal fever presenting no symptoms, but in which the blood examinations showed parasites. Fully 40 per cent of the cases showed no active symptoms.

*The Widal test.*—Five hundred and sixty-one Widal tests were made, of which 96 proved positive and 465 negative. Of the 96 positive reactions, 51 were reexaminations made of cases tested between July 1 and October 4, 1899. In all the cases giving a reaction the clinical symptoms showed them to be typhoid, save in one instance, where the diagnosis was doubtful clinically. In no case in which typhoid fever was diagnosed clinically did the Widal test fail to react.

In point of time the reactions may be divided as follows:

| Day of disease. | No. of cases. | Day of disease. | No. of cases. |
|---|---|---|---|
| Fifth day | 4 | Second week | 2 |
| Sixth day | 10 | Fourth week | 35 |
| Seventh day | 2 | Sixth week | 20 |
| Eighth day | 2 | Six months, convalescent | 5 |
| Ninth day | 1 | One year, convalescent | 4 |
| Tenth day | 4 | Two years, convalescent | 2 |
| Eleventh day | 2 | Seven years, convalescent | 1 |

In the last case the patient gave a clear history of having had typhoid fever seven years ago, and had not been sick until his present illness from chronic dysentery. The case is of interest as showing how long the reaction may persist. It is probable in such cases as this that many of the confusing and varying results of the Widal test have arisen, causing an ill-deserved condemnation of it from men too careless to inquire into the past history of the patient, whose blood has given the contradictory results. The more I use the test the more I become convinced that, if properly used, with perfect technique and proper attention to every detail, it is practically the best and surest diagnostic sign of the disease which we possess at present. In more than one instance in cases when the clinical symptoms of typhoid were entirely absent, and yet a positive Widal was obtained, autopsy showed the presence of typical ulcerations in the intestine, thus proving the correctness of the reaction.

The large negative result is due to the fact that the Widal test has been used largely here as a routine measure, most of the cases being tested regardless of the disease present. There has been no complete tabulated list of these cases kept, but below are listed 360, giving the diagnosis and results of the test. It may be said that on only one of these cases was the result positive, that of a case of miliary tuberculosis. While the patient gave no history of having had typhoid fever, it is possible that he may have had a slight attack while at Chickamauga Park in 1898.

| Diagnosis. | No. | Result of test. | |
|---|---|---|---|
| | | Positive. | Negative. |
| Tertian malarial fever | 45 | | 45 |
| Quartan malarial fever | 2 | | 2 |
| Æstivo autumnal malarial fever | 32 | | 32 |
| Comb. æstivo autumnal and tertian | 9 | | 9 |
| Chronic dysentery | 94 | | 94 |
| Chronic diarrhea | 10 | | 10 |
| Chronic tuberculosis | 50 | | 50 |
| Acute miliary tuberculosis | 5 | 1 | 4 |
| Acute rheumatism | 4 | | 4 |
| Chronic rheumatism | 30 | | 30 |
| Insolation | 5 | | 5 |
| Progressive pernicious anæmia | 11 | | 11 |
| Diphtheria | 5 | | 5 |
| Smallpox | 2 | | 2 |
| Appendicitis | 4 | | 4 |
| Wounds of operative cases | 20 | | 20 |
| Acute pleurisy | 4 | | 4 |
| Tonsillitis | 8 | | 8 |
| Abscess of liver | 2 | | 2 |
| Acute bronchitis | 5 | | 5 |
| Lobar pneumonia | 1 | | 1 |
| Acute gastritis | 1 | | 1 |
| Chronic gastritis | 1 | | 1 |
| Neurasthenia | 1 | | 1 |
| Acute coryza | 1 | | 1 |
| Insanity | 8 | | 8 |
| Total | 360 | 1 | 359 |

*Examination of urine.*—There have been 2,071 specimens of urine examined, both chemically and microscopically. Of these 282 contained albumen, 102 granular and hyaline casts, 97 pus, 13 blood, and 3 sugar.

In examining the urine of chronic dysentery cases I was impressed by the great increase in indican which they presented, and undertook some observations as to the significance of this increase in indican in this particular disease.

Before giving the results of the indican tests a few words regarding the relation of indican to disease, and the objects aimed at in the tests, may be of interest.

When albumen is undergoing bacterial putrefaction indol is produced, and this is the basis of indican. Within the system it is oxidized to indoxyl-sulphuric acid. This acid, decomposed, yields indigo blue or indican. In health but little indol is produced, as putrefaction is absent, and accordingly indican can not be detected in the urine, or, if present, it is in very minute quantity.

Indican occurs in the urine in a number of disease processes and is not pathognomonic of any one disease. It occurs with albuminoid putrefaction. In tuberculosis, in certain nervous disorders, in malignant diseases of the internal organs, and in wasting diseases indican often occurs in excess in the urine. Fetid pus may be the source of indican, as in abscess of liver and empyema. In these tests, then, it is not intended to show that indican in the urine is of any diagnostic importance as regards chronic diarrhea or dysentery, but to learn, if possible, how often it occurs, what its import is, and whether its amount helps in any way in prognosis, and as to the success or otherwise of any plan of treatment.

The test employed for detecting is as follows: Thirty cubic centimeters of urine is mixed with an equal quantity of hydrochloric acid, 1 to 3 drops of dilute nitric acid added, and then boiled, when the mixture turns a dark color. It is then cooled and about 5 cubic centimeters of chloroform added and shaken. The chloroform sinks to the bottom of the test tube and, if indican is present, is colored blue, violet, or almost black. If the indican is present in slight quantity, the chloroform is of a beautiful blue color; if there is a large increase, the chloroform is a deep reddish-violet color, while if the increase is immense, the indican falls as a fine dark-blue or black powder and when it has settled to the bottom of the tube forms a dense, almost black precipitate.

Now, as to the results of the indican tests in cases diagnosed as chronic dysentery to date:

There have been 63 cases investigated, in 46 of which the indican was increased, while in 17 it was normal.

In the 46 cases in which the indican was found increased 22 showed a slight increase, 12 a large increase, and 12 an immense increase.

The relation of the number of bowel movements a day to the amount of indican present is as follows:

| Movements per day. | Number of cases. | Slight increase. | Large increase. |
|---|---|---|---|
| 1 | 10 | 3 | 7 |
| 2 | 11 | 4 | [1]7 |
| 3 | 7 | 4<br>[1]2 | 1 |
| 4 | 6 | 4<br>[1]1 | 1 |
| 5 | 7 | 2<br>[1]2 | 3 |
| 6 | 2 | 2 | |
| 7 | 1 | 1 | |
| 8 | 1 | 1 | |
| 9 | 1 | 1 | |
| 10 | 0 | | |

[1] Immense increase.

The relation of the negative cases to bowel movements is as follows:

| | Cases. |
|---|---|
| 1 movement a day | 1 |
| 2 movements a day | 1 |
| 3 movements a day | 3 |
| 4 movements a day | 3 |
| 5 movements a day | 3 |
| 6 movements a day | 3 |
| 10 movements a day | 2 |
| 11 movements a day | 1 |

Twelve of the above cases have 4 or more bowel movements a day.

At the first test 7 cases had a large increase in indican, with but 3 bowel movements a day.

One week later the same 7 cases showed no indican, but were having from 5 to 15 bowel movements a day. As regards prognosis, the results obtained would at first appear contradictory, if a small amount of indican is considered as a favorable import, but this only apparent. Von Jaksch says: "In general, therefore, the appearance in the urine of large quantities of indican implies that abundant albuminous putrefaction is progressing actively in some part of the system. In simple constipation a notable indicanuria will very often arise." In dysentery and diarrhea no one can doubt but that there is much intestinal putrefaction. Why, then, in many cases having few bowel movements and thus generally considered to be favorably progressing, is indican found, while in many cases having numerous bowel movements the indican is absent or normal? The reason is obvious. In the latter cases, the intestine, by frequent movements, is kept empty, and putrefaction is accordingly less intense; the indol found is rapidly excreted and indican is not formed. Where the bowel movements are few and the disease is present putrefaction is intense, much indol is formed, has time to combine with the sulphuric acid present, and indican is excreted.

This is certainly a strong argument for the eliminative treatment of dysentery by salines, as sodium sulphate, so highly recommended by the French, as no one will deny that indican in dysentery means intestinal putrefaction, and intestinal putrefaction in the long run in these cases means death.

The indican test so far shows this, as regards prognosis: A case of dysentery having few bowel movements a day and showing no indican in the urine is progressing very favorably. A case of dysentery having many bowel movements a day and showing much indican in the urine is in a dangerous condition.

Cases having few bowel movements and much indican need eliminative treatment.

In cases of dysentery having many bowel movements and no indican the prognosis is doubtful, unless the bowel movements are due to eliminative measures.

Further research in this subject will undoubtedly result in at least confirming these results.

*Examinations of sputa.*—There have been 496 specimens of sputa stained and examined for the bacillus of tuberculosis, of which 70 showed the presence of the bacillus, while 426 were negative. Most of the negative results were obtained in patients suffering from chronic diarrhea or dysentery. Many cases of this disease simulate tuberculosis very closely in their lung symptoms and physical signs, there being often a cough, much expectoration, night sweats, etc., while percussion is also misleading, as the abnormally thin chest wall and the oftentimes shrunken or emphysematous lung tissue give a resonance strongly resembling the percussion note in cavity formation in the tuberculosis lung.

There have been many cases of chronic dysentery in which the attending surgeons have suspected and even diagnosed pulmonary tuberculosis, but in which no bacilli were found after repeated examinations of the sputa. Autopsy in several of these cases demonstrated the value of sputum examinations over physical signs, for in none of these cases was there any trace of pulmonary tuberculosis, although hypostatic pneumonia, pleurisy, and emphysema were commonly found and evidently caused some of the physical signs.

The sputa of all patients having a cough was examined for the tubercle bacillus, whether or no lung signs were present, which also helped in obtaining the large negative result. In the examinations for the tubercle bacillus here, as well as elsewhere, I have noticed especially the great variation in morphology which this bacillus presents in different specimens of sputa. These variations are interesting from both a botanical and diagnostic point of view. From the description of the germ in the majority of text-books upon bacteriology we are prepared to see almost invariably a slender rod, about two-thirds the diameter of a red-blood corpuscle in length, straight or slightly curved, and sometimes presenting a beaded appearance. As a matter of fact, though the form just described is altogether the most common, we do find in a very large number of cases many deviations from the classical type, some of them being peculiar and interesting. The beaded bacilli are present in small numbers in almost every specimen of sputa examined, but quite often specimens are found which contain almost nothing but the beaded form of the organism. As the unstained portions of the bacillus are held by some authorities to be spores, it is of interest to inquire into the meaning of this form. It has been the author's experience that the beaded form of the bacillus is found most often and numerously in the sputa of acute, rapidly advancing cases of tuberculosis. As spore formation in a germ is not evidence of rapid multiplication, but only occurs where multiplication by fission is hindered by unfavorable conditions, the spore being a resistant form of the organism calculated to withstand such conditions, we would expect to find spore-bearing bacilli more numerous in chronic or slowly advancing cases of the disease rather than in acute cases, where the conditions must be more favorable for the growth of the organism. It would seem, then, that the form of the bacillus in question can hardly be called a sporulating body if the theory just quoted is correct, but in the present state of our knowledge and reasoning from the well-known appearance of other spore-bearing bacilli when stained it is hard to explain them in any other way. The beaded bacilli are often numerous, sometimes there not being a solid bacillus to be seen in certain microscopic fields, and they resemble very much short strings of minute streptococci. In general, if the bacilli are curved at all it is but slightly, but in rare instances the curvature may be very extreme. In several instances a bacillus was observed almost doubled upon itself, forming a U-shaped organism. This form is, however, very rare, it being much more common to find the organism less acutely bent. These curved forms are almost always stained uniformly throughout, but occasionally they are irregularly stained. They should be carefully examined, as quite often a similar appearance is produced by the joining of two bacilli, but this is more V-shaped.

A form of much interest, because of the liability of its being taken for another organism, is that to which may be given the name of "streptococcic form." Ordinarily the beaded form of the bacillus, if examined carefully, will be seen to be continuous in outline, the clear spaces being bounded laterally by a dimly stained membrane. In this form, however, no such continuation of the bacillus can be found, the deeply stained portions being circular in form and separated one from the other. These deeply stained portions may be two in number when the organism resembles a diplococcus, or they may be strung out in long or short chains, when it is almost impossible to distinguish them from streptococci. It is just here that the method of decolorizing becomes important, for many times I have been in great doubt respecting this form of the organism until, after repeated and careful use of the acid solution, it became evident that it was the tubercle bacillus, and not the streptococcus, which was present. As streptococci are very numerous in tubercular sputa in many instances, and as this form of the tubercle bacillus so much resembles them, too much care can not be taken in staining and decolorizing. In some instances a portion of the bacillus stains solidly and the remainder is broken up into deeply stained dots.

It sometimes happens, in examining sputa for this organism, that forms are detected which are very thick and deeply stained. This appearance may be caused by the coalescence of two or more bacilli laterally, or it may be a form of a single organism. Certainly it has been impossible to detect any separation longitudinally, and I do not remember to have ever seen an appearance which would suggest that this form is composed of more than one organism.

The looped form of the bacillus occurs rarely. The organism is longer than usual, and twisted upon itself so as to form a loop, but more commonly the loop is situated at one end, the rest of the bacillus being straight or slightly curved.

The long "filamentous form" is of rare occurrence, but it is of great interest. It is not an uncommon form in old cultures and has been often described, but in sputum it is much less common. The filaments are almost invariably stained uniformly throughout, the only thing peculiar about them being their curved outline and their great length. Their resemblance to the tubercle bacillus as ordinarily described is, as can be seen, very slight, but as they are very rare and always accompanied by large numbers of the classical bacilli the diagnosis of tuberculosis will not be endangered.

The remarkable feature about the "knobbed form" is that at some portions of the bacillus, generally on its lateral surface, there is a well-developed knob or lump. This lump may, however, be situated in the center of the organism.

Having within the past three months come across two cases the sputa of which showed numerous examples of the branching form of the bacillus, a description of this rare form may be of interest. I have observed it once before in tubercular sputa and quite often in old attenuated cultures of the germ. Nocard and Roux were the first to call attention to branching and budding forms in avian tuberculosis. Klein, Dixon, and Mafucci noticed the branched form in old cultures, and Fischel called attention to the analogies between those organisms and the ray fungus of actinomycosis. Coppen Jones has contributed valuable information regarding these forms, and Burns, Marpmann, Bahr, Friedrich, and Semmer have confirmed the occurrence of such forms. These forms have been observed most frequently in old cultures, but Fischel and Coppen Jones have observed them in the sputa.

In preparations from the sputa, in two cases examined here, several bacilli presented true branching and also what I believe to be intermediate stages between the simple and the branched rod. While the typically straight or slightly curved rods were much the more numerous, yet every preparation showed some of the branching forms. In neither of these cases, however, were the intermediate and large branched forms so numerous or so typical as in a case previously reported by me in the Journal of Experimental Medicine, Vol. 111, No. 3, 1898.

Very common in many specimens of sputa were bacilli which resembled the branching forms and which may be called "false branching forms." On casual examination the resemblance which these bacilli (for they are multiple) bear to the true branching form is striking and it needs very careful focusing and good illumination, in many instances, to distinguish the difference. This appearance is due, not to a single bacillus sending off branches, but to two or more bacilli lying closely together and in such a position as to give the impression of true branching. Careful examination will, however, in almost every instance disclose a slight, unstained interval at the point where the suspected branching takes place. Such a minute examination should be made of every bacillus which appears to branch. Where no unstained interval can be detected by reason of one of the bacilli overlapping another, careful focusing will show a difference in the level of the bacilli where they overlap, and also a deeper staining at this point, whereas in the true branching form no such difference in level or staining can be detected. Another distinction exists in the fact that in the false branching type the bacilli forming the supposed branches are of the same length as the parent germ, whereas in the branching form the branches may be much longer or shorter than are the bacilli from which they spring.

Of the true branching bacilli several forms may be observed which are doubtless simply stages in the growth of the organism. In certain fields there are some bacilli which show at one or more points small knob-like projections, which cause a marked bulging in the outline of the organism. They need sharp focusing and a good light to be distinguished, as in some of them the bulging is very slight and only careful examinations will demonstrate it. The bulging or knob is generally situated laterally, but may be central. The bud, as it may be called, stains like the rest of the bacillus, and sometimes a very small, oval, unstained speck may be seen within it which resembles the unstained sections of the bacillus. Generally, however, no such appearance is present, the bud staining uniformly throughout. Is this unstained oval speck a spore? I believe not, any more than are the similar unstained spots which occur in tubercle bacilli in general and which are not regarded by the best observers as spores.

The budding form just described is of interest, as it is doubtless the first stage of branching, and I believe it to be present more often than is generally known. I have examined a large number of specimens of phthisical sputa since I first observed this form and have found it present in about 15 per cent of the cases, although in none was the branched form present. This result may appear contradictory if we assume that the budding is the first stage of the branching form, but it is probable that some unknown factor has hindered the further development of the process of branching.

From the budding forms to the fully developed branching forms is merely a stage of growth, evidenced by finding now and then a bacillus with very short branches, evidently outgrowths from the small elevations. The fully developed forms are bacilli, presenting one or more branches developing from the parent bacillus. There are many variations in the manner of growth. Occasionally bacilli are seen where the primary branches have given off one or more secondary branches.

Fantastic figures are often formed by the bacilli, caused by their curved form and the twisting of the branches which are given off. Nearly all the bacilli show well-marked stained and unstained areas, but it is noticeable that the branches present fewer of these, although some show unstained areas, irregular in outline. The bacilli are always larger than usual and often filaments are seen which are very long. The bacillus destined to branch becomes longer than usual and presents one or more knob-like outgrowths somewhere along its course. These outgrowths gradually lengthen and at last become true branches, which may in turn give off other branches.

We are not informed as to the special conditions which determine the development of branching forms of the tubercle bacillus. They have been most frequently observed under unfavorable conditions of environment, as in old cultures. Still, the recent observations of Babes and Levaditi and of Friedrich show that similar forms occur in fresh miliary tubercles. Various theories have been advanced as to the significance of the branching, filamentous, and club-shaped forms of the tubercle bacillus. Some have considered these to be simply degenerative or pathological forms of the bacillus, and without significance as to the classification of the organism. This is the view advocated by A. Fischer, who places these forms of the tubercle bacillus, as well as similar ones of the diphtheria bacillus, in the group of involution forms. There are several objections to this view, of which it will suffice to mention that the forms in question are not limited in their occurrence to old cultures and unfavorable conditions of environment. The opinion more generally advocated is that the occurrence of these forms necessitates some change of formerly accepted views as to the classification of the micro-organisms concerned. Thus, Klein suggests that the branching is a reversion to an ancestral type which presents mycelial growth. Fischer points out the analogies between actinomyces and the tubercle bacillus and Coppen Jones holds that both belong to the same group of organisms, but he leaves undecided whether this is among the hyphomycetes or some other class. He suggests the name tuberculomyces (hominis, avium, etc.) for the bacillus. Burns regards the branching shapes as involution forms when observed under parasitic conditions. He says "they pertain to the saprophyte growth form of a higher organism, which as a parasite in the animal body appears in the form of rods." Marpmann accepts the interpretation of Burns, employs the designation "mycobacterium tuberculosis," a name adopted by Lehymann and Newmann in their Grundriss der Bakteriologie.

The sharper differentiation within recent years of the streptothriceæ, cladothriceæ, and allied organisms has led several writers to express the opinion that the tubercle bacillus and diphtheria bacillus are very closely allied to the streptothriceæ, and some hold that they should be transferred to this group. Kruse, in the last edition of Flugge's Mikro Organismen, discusses this question, and although he does not venture to place the bacteria in question under the streptothriceæ he considers them to be very closely related to actinomyces and other organisms belonging to this group. Johan-Olsen places the tubercle bacillus under the streptothriceæ, and accepts the name "tuberculomyces." The streptothrix group is characterized especially by branching filamentous forms of organisms, and is placed between the bacteria proper and the hyphomycetes, being more closely akin to the former than to the latter.

It is evident that further investigations are needed in order to enable us to come to any definite conclusions as to the significance of the branched forms considered, and for the present it would seem premature to adopt any radical change in the accepted classification of the tubercle bacillus.

*Examination of fæces.*—There have been 313 examinations made of the fæces, of which only 8 showed the presence of the amœba coli. This result has been surprising to me, as I had expected to find a large portion of the cases of dysentery returning from the Philippines to be amœbic in nature. That such is not the case, however, is evident by the exceedingly small number in which amœbæ were found and by the findings at autopsy. The greater part of the dysentery afflicting our troops in these islands is due to a different cause; the pathological lesions produced are dissimilar to those of amœbic dysentery, as are also the clinical histories of the cases. In a special report upon the pathology of dysentery, which will be submitted to you very soon, I have considered the character and microscopical findings of the diseased intestines and my observations upon a bacillus separated from the tissues in certain cases, and which is evidently identical with that separated by Flexner in cases studied at Manila and by Shiga in Japan. While it is hardly justifiable to claim that this organism is the cause of the disease, at the present time it is very probable that it is.

In the fæces of 4 cases large numbers of the cercomonas intestinalis were found. These little parasites belong to the protozoa, and were first found by Zambl. They are pear-shaped organisms, possessing a nucleus and from 2 to 8 slender, hair-like flagella, which propel the parasites through the material containing them. They move about very actively, often turning completely about and then rushing ahead by a series of peculiar jerky movements. They were present in these cases in large numbers and undoubtedly aggravated the intestinal condition. They have been observed by Davaine in cholera dejections, by Marchand in typhoid, and by Zunker in 9 cases of diarrhea. They apparently thrive in a diseased intestine and probably cause diarrhea and perhaps ulceration. This view is supported by Zunker, Grassi, and Marchand. I have seen these organisms in the fæces of several cases of diarrhea before, but never in such numbers as in these cases, nor have I ever observed them in the fæces of a healthy person.

Tænia segments or ova were not observed in any of the cases, nor were distoma nor ascarides. The anchylostoma duodenale and their ova especially were looked for, but no evidence of their presence was discovered, the ova not being found in the fæces nor the worm in the intestines at the autopsy. The nematode worm, rhabdonema intestinale or anguillula stercoralis, was found in the fæces of one patient suffering from chronic dysentery. The clinical history of the case and the description of the parasite is as follows:

Clinical history: Private J. B., Battery D, Sixth Artillery, age 20. Father died of typhoid fever; mother died of pulmonary tuberculosis at the age of 45; one sister died in infancy; has one brother living. Patient had chills and fever about six years ago. He was taken with diarrhea in Raleigh, N. C., in May, 1898. The attack lasted three weeks. Went to Cuba in December, 1898, and had a second attack while there in February, 1899. The diarrhea has persisted since that time, save during May of this year, when he was some better. Went to Manila in July, 1899, and did duty, despite 10 to 12 movements a day, until October 20, 1899, when he was sent to the hospital. At times his stools have contained blood and he has suffered from tenesmus. He was admitted to this hospital December 19, 1899. Examination showed marked anæmia and emaciation (weight 105 pounds), general tenderness over abdomen, slightly enlarged and tender liver, spleen normal in size, heart and lungs normal. The tenderness in the abdomen is most marked around the umbilicus, and he gives a history of having severe cramp-like pains in this region three weeks ago, but none of any severity since. On December 28, 1899, since taking thymol, his appetite has increased. His bowels move now 7 to 8 times a day and he has gained about 7 pounds in weight.

*Microscopical examination.*—A specimen of fæces was sent to the laboratory on December 20 to be examined for the Amœba dysenteriæ. The fecal matter was semiformed, bright greenish in color, and contained no blood or mucus. Careful search was made for the amœbæ but none were found. In one preparation, however, two specimens of the nematode worm, the *Rhabdonema intestinale* or *Anguillula stercoralis* was found. These worms measure about 2 mm. long by 0.44 mm. broad, with pointed tails and mouths furnished with three lips; they move sluggishly about, and their structure could be easily made out. This worm was discovered by Normand, a French army surgeon, who found them in the excrements of French soldiers suffering from the so-called Cochin China diarrhea.

The history of the worm is briefly as follows: The mature worm lives in the intestinal mucous membrane of the duodenum and upper portion of the jejunum. Of the adult form only the female has been discovered. The female is easily distinguished by five or six elliptical eggs lying attached to one another about the center of the body near the vulva. The ova develop rapidly, and before the fæces leave the intestine the egg breaks and the minute embryos, measuring 0.2 to 0.3 mm. in length, are set free in the fæces. The ova are rarely found in the stools, and it is still more rare to find the adult worms. When the ova are found in the stools they occur in strings of three or more. Manson thus described the embryos after they leave the human body: "First, unless they gain access to nonputrefying fluid, they die; the fæces containing them, therefore, must mix freely with water. Second, if the temperature be low the embryo rhabdonema develops into a filariform larva, which, when swallowed by man, quickly assumes the parasite form. Third, if the temperature be high, the embryos develop into male and female rhabditic worms, and on being transferred to man become *R. intestinale.* These free mature rhabditic forms are what was formerly known as *Anguillula stercoralis.* They were found in fæces at post-mortem examinations and in the fæces after discharge."

The remarkable facts in this case are, first, that the worms occurring in the fæces are adult worms, and, second, no embryonic forms were found. No adult worms have been found in the fæces since the first examination. As to the pathological significance of their presence in the intestine, there is divided opinion. They were at first supposed by Normand and others to be the cause of Cochin China diarrhea. At the present time this theory has been abandoned, but the fact remains that they are only present in cases of chronic diarrhea, never being found in a healthy intestine, and are present in immense numbers, being found post-mortem, coiled up within or upon the intestinal follicles, the mucous membrane of the intestine being thickened, inflamed, and somewhat necrotic. It is impossible to believe that hundreds of these parasites could be present in the intestinal membrane without causing some pathological lesions, and it is not improbable that they at least aggravate intestinal disease, if they do not actually cause it. As to treatment, little can be said. The ordinary anthelmintics are wholly ineffective, and the only drug which has proved at all successful is thymol continued for a long time. In the case under consideration the administration of thymol has been followed by marked improvement.

Besides Cochin China, the *Rhabdonema intestinale* has been found in the West Indies, Brazil, Ceylon, Egypt, Bombay, Italy, and Germany. From the history it is impossible to say where infection took place in this case, but probably either in Cuba or in the Philippine Islands. At the writing of this report, two months after admission, the patient had not improved perceptibly, his diarrhea still continues, but no more adult worms have been found in the fæces.

Because of their diagnostic importance and the fact that they are often mistaken for other structures occurring in the intestinal tract, a brief description of the amœbæ of dysentery as observed here may be of interest. It is safe to say that among the parasites causing disease in man there is none which has been more often blamed unjustly for disease conditions than has the amœba coli. This is because it has so often been said to be present in the fæces when in reality it was not; other things slightly resembling it have been mistaken for it. Large intestinal epithelial cells, leucocytes, collections of anæmic blood corpuscles, monads, and the *cercomonas intestinalis* have all been gravely shown to me as the veritable amœba, and that by men otherwise well informed in such matters. To know the amœba one has to have seen it, and it is one of the most difficult of parasites to recognize from the common text-book description of it.

As is well known, Losch, in 1875, was the first to describe this organism, and numerous observers have since confirmed his researches. Among these may be mentioned Kartulis, Kruse, Koch, Manson, Councilman, Lafleur, Dock, and Leuckart. The organism belongs to the Protozoa, class Rhizopoda. It is simply a mass of protoplasm provided with a more or less distinct nucleus; hence the liability to mistake it for other similar unicellular organisms or even large cells. When at rest the organisms may be circular or oval in shape, if arrested while in motion may be irregular. It is more refractive than other cells occurring in the fæces, with the exception of the monads, and the protoplasm has a peculiar faintly greenish hue, almost like that of certain malarial crescents. Its size varies greatly, from 5$\mu$ to 35$\mu$ in diameter, but most of the amœbæ seen ordinarily measure from 15$\mu$ to 25$\mu$ in diameter. While many authorities claim that the amœbæ seen in any one case are all about the same size, this has not been my experience, and in the cases cited above the amœbæ differed widely, some being very large, others small. The shape, also, varies much, some being perfectly circular, others oval, and others irregular in shape. As ordinarily described, the organism is said to consist of two parts, an inner, granular portion, called the endoplasm, and an outer portion, called the ectoplasm. This description has been the cause for mistaking the organism for large cells, the inner portion corresponding to the granular nucleus and the outer portion to the protoplasm. As a matter of fact, this differentiation can not be made out in all cases by any means, and very seldom in an amœba, which is not motile. While doubtless the two portions mentioned exist, yet too much stress is laid upon them, resulting in confusion, as only the experienced observer can in most instances distinguish them. The organism possesses a nucleus, but this is often difficult to make out, especially in moving amœbæ. It is situated somewhat to one side and is very refractive; its outline is often more or less irregular. The endoplasm forms most of the substance of the organism, is of a peculiar faint greenish hue, very finely granular, resembling finely ground glass, and generally shows a number of perfectly circular or oval so-called vacuoles. The vacuoles are spaces within the protoplasm of the organism, clear cut in outline, and collected together in groups. Many of them seem to contain two or four very refractive dots resembling micrococci. Although these spaces are generally called vacuoles, it is by no means certain that they are so. Certainly they do not resemble the vacuoles in blood corpuscles, and it always appears as though they do not penetrate entirely through the organism, their floor seeming to be formed by a thin veil-like layer of protoplasm. It is impossible to believe that these peculiar spaces are vacuoles, and it is by no means settled that they are so. These spaces vary slightly in size and in number in different amœbæ. The small amœbæ seldom show any, but the large ones seem often to consist of a collection of them surrounded by a small amount of the protoplasm. It would seem from this that such an amœba might be a sporulating body, as the oval spaces resemble very strongly the segments of the sporulating malarial plasmodia. The amœbæ generally show more or less material within their protoplasm, which they have absorbed. They often contain red blood corpuscles, bacteria, pigment particles, etc. Often these inclusions are so numerous that the structure of the amœba is entirely hidden. When it can be seen the ectoplasm consists of a narrow rim of a clear, light-green color surrounding the darker endoplasm.

Now, as to the mobility of the amœba. It is always motionless in fæces which have not been kept warm, as a temperature below 75° F. renders it immotile, but it is often possible, after preparing a specimen upon a slide from such fæces, to render the organism motile by gently warming the slide over an alcohol lamp. The motility of the organism varies, but it is generally a slow amœboid motion, it throwing out rounded protoplasmic processes, exactly as does the leucocyte. These processes are always perfectly clear and formed by the ectoplasm, and these are often the only portions of the organism which show the differentiation into ectoplasm. In rare instances the movement is rather rapid, the processes being thrown out quickly and the whole organism moving in an eccentric, jerky manner. More often, however, the change in position is very gradual, and only careful watching will detect it. Often, also, the organism does not change its position, but merely its shape, the protoplasmic processes being projected and retracted, sometimes so very slowly that only close scrutiny will detect it. Often, also, a peculiar undulatory motion of the border of the organism is noted, exactly like that occurring in the malarial parasites.

When the temperature is that of the body the amœbæ are most active and progress by an almost imperceptible projection, and flowing into such projection of the mass of the organism. When, however, the temperature is low it can be seen that the protoplasmic projection gradually becomes larger, until at last the granular endoplasm flows into it. This process is repeated, and thus the organism alters its position.

The color and the refraction of the amœba should serve to distinguish it from cellular material, as intestinal epithelium, it being of a peculiar faint-green color and very refractive, which is marked enough so that even with a two-thirds objective it can be picked out from the surrounding cellular matter. These properties, however, do not seem to distinguish it from the monas and cercomonas, which are also greenish in color and refractive, but they are much smaller than the large amœba and much more actively motile, not throwing out protoplasmic processes, but moving by means of flagella. To one who has seen the amœba these organisms could never be mistaken for it, but mistakes have been made often when the observer had only the text-book description to guide him. To sum up, then, the amœba is a round, oval, or irregular protoplasmic body, varying in size; motile or immotile, the motility amœboid in character when present being generally moderate; pale or faint green in color; refractive, with a sharply cut border, and containing circular or oval lighter colored spaces, known as vacuoles. In some a darker colored nucleus can be distinguished, and in the immotile organisms a darker colored central or eccentric portion, containing the vacuoles and comprising the greater part of the parasite, and known as the endoplasm, can be seen surrounded by a narrow or much smaller layer, lighter in color and clear, known as the ectoplasm.

Nothing is known as to the method of reproduction of the parasite, but it is generally believed to be by sporulation. If this is so, it is probable that the so-called vacuoles are in reality spores, the mother parasite eventually rupturing, and thus setting them free. Reasoning from what occurs in other similar organisms, this is the most probable method of reproduction. It is impossible, in observing a large circular amœba, filled with the oval or round spaces so that only a thin strip of protoplasm remains visible, to resist the impression of its resemblance to the large segmenting tertian plasmodia, just before the segments separate and become free. Another interesting analogy between the two parasites is that in both a solution of sulphate of quinine arrests all motion immediately and destroys them.

It is not a very difficult matter, where the amœbæ are numerous in the fæces, to obtain good stained specimens if sufficient care be taken in their preparation. While undoubtedly the amœbæ show to greater advantage when stained in sections of tissue, yet the method of staining them in fæces is most practicable and useful, and if the smears are made sufficiently thin the organisms will show very perfectly. So little is said in the recent text-books regarding the appearances presented by the stained amœbæ that a somewhat detailed account of their staining reactions is of interest. Like all protozoan organisms, the nucleus stains with more or less difficulty, but I have found that carbolic fuchsin stains it, as well as the nucleolus, very easily and deeply, while methylene blue stains it dimly and often not at all.

I have tried a large number of different staining solutions, but have found that only three are really worthy of use, in that they are sure, rapid, and show the minute structure of the amœba well. These are: Loeffler's methylene blue solution, carbolic fuchsin solution, and thionin solution. Of these solutions Loeffler's methylene blue is the quickest and best stain for general use, while the carbolic fuchsin solution is by far the best where it is desired to stain the nucleus and nucleolus, as well as certain peculiar bodies within the protoplasm of the amœba. The thionin differentiation method recommended by Mallory, which often gives beautiful results in staining amœbæ in tissue, gives but fair results in the staining of the organisms in fæces, and can hardly be said to be differential, as other structures in the fæces take and hold the stain. It is a useful stain, but methylene blue is far better and much more easily applied.

Having found a specimen of fæces containing numerous amœbæ, the smears are prepared as follows: Several cover glasses are thoroughly cleaned and placed in a row upon the table. With a sterilized platinum loop a small flake of mucus is picked out of the fæces and placed upon a cover glass. This is repeated, a minute flake of mucus being placed upon every other cover glass. The intervening clean cover glass is then dropped gently down upon the glass containing the mucus, and then the two are slid apart, very gentle pressure being used in doing so. By proceeding in this way a dozen or more very even smears can be secured in a few minutes time. The smears are then placed face up in equal parts of alcohol and ether and allowed to harden for thirty minutes. If the fæces are warm when the preparations are made, many of the amœba will be hardened while undergoing amœboid motion. After hardening the smears are ready to be stained.

*Loeffler's alkaline methylene blue solution.*—The smears are stained in solution for from three to eight or ten minutes; about five minutes gives the best results. They are then washed in distilled water and mounted in Canada balsam. The amœbæ take the blue stain very well, staining almost as deeply as the nuclei of the epithelial cells. In such stained preparations three stages of the amœbæ can be detected. The small amœbæ, staining comparatively uniformly; larger ones, staining less uniformly and containing one or more vacuoles, and still larger ones, riddled with vacuoles, staining very deeply. The smaller or young amœbæ stain much more intensely than the larger ones, and with the methylene blue seldom show a nucleus. No vacuoles can be seen, nor do they often contain red blood cells. The protoplasm is of a rather dark-blue ground color, with small oval or round lighter blue areas, but stain almost uniformly throughout. No distinctions can be traced between the ecto and endoplasm. These small amœbæ are generally round, but sometimes show small pseudopodia, which generally stain very intensely. Some of the small amœbæ show a peculiar mottled appearance, light and dark stained areas alternating throughout their protoplasm. These small forms are evidently young amœbæ. In all the preparations the most numerous forms of the amœbæ are those now to be described. They are large, generally round or oval in shape, although if the preparations are made when the amœbæ are active many of them are irregular in shape and showing pseudopodia. The protoplasm of these amœbæ stains irregularly, but there can be no distinct differentiation into ecto and endoplasm made. One portion of the amœba stains very densely, and there is a gradual shading off into a lighter blue color. In the irregular forms this is most noticeable, the pseudopodia staining very dimly, due to the fact that they are composed of ectoplasm, which takes the stain lightly. Some of the pseudopodia, however, stain very intensely, due, probably, to the fact that the endoplasm had flowed into them just before hardening. These fully grown amœbæ show from one to three or more large vacuoles, which are entirely unstained, but besides these there are numerous small oval or round, very dimly stained areas scattered throughout the protoplasm, which are evidently not vacuoles, and correspond to the same areas observed in the very young forms. Scattered between the oval, dimly stained areas are very deeply stained small portions of protoplasm. The staining phenomena of these amœbæ exactly resemble those of the large segmenting tertian malarial plasmodia. The vacuoles and the dimly stained areas are entirely distinct, the dimly stained areas being oval or round, much smaller than the vacuoles, having a dim outline, and evidently not penetrating the organism, as do the vacuoles. Many of these amœbæ contain red blood cells which do not stain, but show as round or irregular light areas scattered through the protoplasm of the parasite. In a few of the amœbæ very deeply stained, almost black, oval-shaped structures can be seen, generally arranged near the periphery of the organism and resembling bacilli, save that they are too large and are often irregular in shape. In preparations stained for some time some of the large amœbæ show a very deeply stained, almost black nucleus. Surrounding this nucleus is sometimes seen a more lightly stained area with a deeply stained, almost black border. Besides blood corpuscles, the protoplasm of these amœbæ contains numerous more deeply stained, almost black granules and rods and dots which are evidently bacteria of various kinds. Besides the two forms of amœbæ described, large round forms are seen, containing numerous vacuoles and staining more or less dimly. No nucleus can be demonstrated in these forms, nor can the small oval unstained areas be seen. In most instances these amœbæ are simply riddled with vacuoles, the amœba consisting of a stained shell perforated by vacuoles. Many of these show evidences of fragmentation. These are probably degenerate amœbæ undergoing, just as does the plasmodium of malaria, vacuolization and fragmentation. It is a significant fact that such amœbæ never show any inclusions in the way of blood corpuscles or bacteria.

Smears are stained with carbol fuchsin for from five to ten minutes, washed in water, and mounted in Canada balsam. This stain is especially useful in demonstrating the nucleus, which stains very beautifully. The same structures are seen in amœbæ stained by this method as by methylene blue, but, in addition, the nucleus, nucleolus, and certain other details can be made out. The nucleus stains a deep red, is usually situated eccentrically near the edge of the parasite, probably at the juncture of the ecto and endoplasm, but it may be more central. It contains a small, more deeply stained nucleolus and a few almost black granules, while the nuclear substance contains minute, more deeply stained areas. The nucleus is oval in shape and regular in outline. As noted before, the large amœbæ, containing great numbers of vacuoles, do not show any nucleus.

Besides the nucleus and its contents the fuchsin stain demonstrates within the protoplasm of many of the amœbæ some very peculiar bodies, the nature of which it is impossible to conjecture. Scattered irregularly through the protoplasm are variously shaped particles stained a deep, brownish red, and especially numerous near the nucleus. These particles are oblong in shape, as a rule flat, and much larger than any bacterium. They present often a fractured extremity, as though they were crystalline in structure, and it may be that they are certain crystals absorbed from the fæces.

In all preparations from the fæces, however stained, amœbæ are seen evidently undergoing fragmentation. Numerous knob-like outgrowths are seen almost entirely separated from the parasite, and some which are separated. These fragments stain deeply, and the fragmenting parasite usually shows a normal appearing nucleus, thus showing that the process is a degenerative and not a reproductive one.

Little need be said of the thionin stain. It gives similar results to those just described, and is not nearly as satisfactory as the methylene blue or carbolic fuchsin.

This much can be said to have been demonstrated by the study of stained specimens of the amœbæ:

1. That vacuolization is a degenerative process, as the young amœbæ show no vacuoles, the full-grown, healthy ones few, while the amœbæ in which they are

most numerous are degenerate bodies, showing neither a nucleus nor inclusions of any kind.

2. That there occur in all but the degenerate forms of amœbæ small round or oval unstained areas, uniform in appearance, and most numerous in the large, full-grown forms, and entirely absent in the vacuolated shells of amœbæ. These areas resemble the same areas observed in stained segmenting malarial plasmodia which are in them, due to the young spores, which take the stain but faintly. Reasoning from analogy, it may be seen that these areas in the amœbæ are also spores.

3. That in the protoplasm of the amœbæ there occur peculiar structures, evidently not bacterial in nature, the significance of which it is impossible to decide. It may be that they are certain crystals which occur in the fæces and which have been absorbed by the amœbæ.

I have continued experimental work upon the bacillus which I separated from 3 cases of dysentery in cultures from the intestinal ulcerations and spleen, with especial reference to the agglutination reaction of the bacillus with the blood of cases of dysentery. Of 10 cases of dysentery which were in serious condition in that they were all bed cases and having numerous bowel movements, 9 gave a marked agglutination reaction in a dilution of 1 to 30 within ten minutes, and the 1 remaining gave a slight reaction in the same dilution in fifteen minutes. Of 10 cases of convalescent dysentery, 6 gave a reaction within fifteen minutes. Thus of 20 cases diagnosed as dysentery 16 gave a reaction with the dilution of 1 to 30 within fifteen minutes. These results were very interesting, and undoubtedly show an etiological relation between this bacillus and dysentery.

I have also been able to compare my bacillus with a culture of the bacillus which Professor Flexner separated from dysentery cases in Manila, and which he has kindly sent me, and find that the bacillus which I have separated from cases here is identical with his, and, furthermore, that in all the above agglutination tests bacilli from both his and my culture gave the same results.

I will report further upon this subject, especially as to the results of inoculation of guinea pigs with the bacilli in question.

*Examination of cultures.*—Cultures have been inoculated and examined from 46 cases of suspected diphtheria, of which 13 proved positive, the Klebs-Loeffler bacillus being found, while 33 proved negative.

*Examination of post-mortem material.*—Since November 1, 1899, I have embedded in paraffin and cut sections of all diseased organs in every case coming to autopsy at this hospital. Organs have been sectioned and preparations mounted from such organs. While this has entailed much work upon the laboratory, I feel that it is more than repaid by the accurate and complete pathological record which such work has enabled us to make.

The microscopical findings in the cases have been added to the post-mortem records and forwarded each month to the Surgeon-General of the Army.

*Miscellaneous examinations.*—Twenty-four miscellaneous examinations have been made. These examinations include work upon the influence of anæsthetics, upon the composition of the urine, and the use of nuclein in chronic malarial infection. This work will be reported upon as soon as possible.

The laboratory is well supplied with all necessary apparatus, which is in good condition.

There have not been as many special investigations carried on in the laboratory as would be desirable, or as there were opportunities for, due entirely to the time which the routine work in the laboratory requires.

## HOSPITAL SHIPS.

*The Relief.*—During the past year the hospital ship *Relief* has been on duty in connection with military operations in the Philippine Islands. Experience had shown that this vessel did not have a sufficient coal-carrying capacity to undertake the voyage across the Pacific without some risk. She was therefore sent to Manila for duty in the Philippine waters. The following report, dated June 30, 1900, by Maj. H. O. Perley, surgeon, United States Army, to the chief surgeon, Division of the Philippines, shows the value of the services rendered by this vessel:

On January 1, 1900, the ship was lying in Manila Bay, as a floating hospital, with 107 sick and wounded officers and men, collected on our trip in December, 1899, from

Dagupan, San Fernando de Union, San Fabian, Vigan, and all ports in northwest Luzon. They were the seriously wounded and sick from the commands of Generals Young and Wheaton, who had just made very severe and exhausting campaigns in the north.

On the 13th of this month we proceeded, under your orders, to Bacoor, Niac, and Batangas, south Luzon, taking off the wounded and sick from General Schwan's command as they progressed southward, and furnishing medical and surgical supplies for the hospitals established at the different places, as well as for the moving command. From Batangas we returned to Lemeri and Taal, established a field hospital there from the supplies on board, and took off the sick and wounded. We returned to Manila January 27, having 222 patients on board. As the *Relief* had not been docked or repaired since September, 1899, it was deemed necessary that we should proceed to Hongkong (the nearest suitable place for the purpose), and in compliance with your orders we put in coal, provisions, and an abundance of medical and surgical supplies and vaccine virus. We left Manila February 7, touching at the ports of Subig, Iba, Dagupan, San Fernando de Union, Vigan, and Aparri (all seaport and garrisoned towns). We left an abundance of supplies at each place, and from Aparri went direct to Hongkong, China, where we arrived on the 13th of February, having on board at the time 73 convalescent patients. On account of the crowded condition of the dockyard we were obliged to remain three weeks, and even then the repairs were not satisfactorily done.

While in Hongkong the ship was carefully inspected by many foreign officers, both line and medical, and their admiration for her fittings and general usefulness as a floating military hospital was outspoken. We left Hongkong March 4, and revisited Aparri, Loag, Vigan, San Fernando de Union, Dagupan, Iba, and Subig on our return, taking off the patients who were selected for discharge on surgeon's certificate of disability or who required the aid of a specialist in Manila. In all, 44 patients were collected on this trip. At every place we stopped the medical department was carefully inspected and a report rendered to you.

From March 12 to 25 the ship was a floating hospital in Manila Bay. On the latter date, after having taken on an abundance of supplies, both medical and surgical, vaccine virus, and water filters, the ship started south. We had when we left Manila 8 convalescents on board.

The following ports were visited, and at each supplies as required were put off, and patients, particularly those who were selected to go to the United States and those requiring the aid of a specialist, were taken on board. Vaccine virus and water filters were furnished as needed: Nasugbu, Lemeri, Taal, Batangas, South Luzon Island; Iloilo, Kapiz, Panay Island; Bacalod, Dumaguete, Negros Island; Jolo, Sulu Island; Port Isabela, Basilan Island; Zamboanga, Cotta Bato, Dapitan, Iligan, Cagayan, Mindanao Island; Cebu, Cebu Island; Romblon, Romblon Island.

Our arrival at Cagayan, Mindanao, was very opportune. There had been an unexpected midnight attack on the garrison forty-eight hours before our arrival, and the hospital was filled with severely wounded men. These were taken on the *Relief*, their wounds re-dressed, and the patients cared for. Supplies were put off in abundance for the hospital.

It was your intention that the ship should also include the ports in Leyte, Samar, and southeastern Luzon on this trip, but the scarcity of water and our inability at the time to obtain coal rendered it necessary for us to return to Manila, which we did, arriving on the 21st of April.

The medical department of every post visited was carefully inspected by Maj. Frank R. Keefer, surgeon, United States Volunteers, who was detailed by you for this purpose. Patients were collected from the different ports. On April 26, after having taken on medical and surgical supplies, the necessary coal and water, etc., we left Manila to complete the southern trip.

The following ports were visited: Romblon, Romblon Island; Baibai, Okmoc, Leyte Island; Tacloban, Catbalogan, Kalbayok, Samar Island; Legaspi (Albai Gulf), Nueva Caceres, Tobaco, Sorsogon, Donsol, Lucena, southeast Luzon.

Supplies were furnished, the selected patients taken off, and vaccine virus and water filters were given out as required. At each station from which it was found that small substations were regularly supplied by the quartermaster's boats supplies in sets were furnished.

The *Relief* returned to Manila on the evening of May 10, and from that date to the 31st she was lying as a floating hospital in Manila Bay.

From January 1 to May 31, 1900, the ship traveled 6,375 nautical miles, and although at times in very rough weather and in uncharted regions, we have fortunately met with no accident. In coming away from the China coast we ran into a very hard blow, but the ship showed her seaworthiness.

The following table exhibits the work done:

| | |
|---|---|
| Sick on board January 1, 1900 | 107 |
| Sick on board May 31, 1900 | 194 |
| Sick received between January 1 and May 31, 1900 | 743 |
| Sick returned to duty between January 1 and May 31, 1900 | 408 |
| Sick died on board between January 1 and May 31, 1900 | 10 |
| Sick sent to United States between January 1 and May 31, 1900 | 69 |
| Sick transferred to other hospitals | 166 |

When it is remembered that only serious cases have been transferred from the post hospitals to this ship, the large number returned to duty and the small number of deaths on board illustrates better than words the necessity of a floating hospital fitted up with all modern appliances in these islands. I know of no means of treatment which will restore debilitated men, worn out with hard marching and malaria, quicker to duty than a sea trip and good food.

The special-diet kitchen on the ship has been our main reliance in the treatment of most of our chronic dysentery cases, and the results have been very satisfactory.

The value of a hospital ship in these islands can not be expressed in statistics. To be able to furnish all needed supplies to the seaport garrisons, which are otherwise inaccessible, is a matter of great importance. To take off the wounded and sick of a marching column and to meet them at designated places with all the necessary supplies, thus relieving the general commanding of anxiety for and care of the wounded, is, as one general officer expressed to me, "a marked advance in modern warfare, if not in humanity."

In concluding this report I can not but express my appreciation of the skill and care exercised by Captain Harding, sailing master, and the ship's officers and crew, in navigating the ship and in making the dangerous landings. Twice we have been under fire in bringing off the wounded, and every man of the sailing crew did his duty.

*The Missouri.*—As stated in my last annual report, the hospital ship *Missouri* sailed for Manila by the eastern route September 30, 1899, with a full staff of medical officers, hospital corps men and nurses, members of the Hospital Corps en route for service in the Philippines, and stores of medicines and medical and hospital supplies and property. She arrived at Manila, after an uneventful voyage, November 28, 1899, and on December 31 sailed for San Francisco, Cal., having on board 269 patients, 13 of whom died before the vessel reached her destination on February 13, 1900. Here it was reported that the repairs necessary for the continuance of this ship in service would cost a considerable sum and would occupy much time. Meanwhile the Quartermaster's Department had established a fine line of transports between San Francisco and Manila, each of which had a well-equipped hospital. Sick men in numbers not to exceed the capacity of each vessel could be returned comfortably to the United States on these transports. I therefore recommended the disuse of the *Missouri* as a hospital ship, and she was accordingly turned over to the Quartermaster's Department.

The *Terry* was at one time proposed as a suitable vessel for hospital purposes in Cuban waters; but the conditions in Cuba became so changed that it did not appear to me to be necessary to secure a hospital ship in place of the *Aid* for service in connection with the troops in garrison in that island.

## HEALTH OF THE ARMY.

### HEALTH OF THE ARMY IN 1898.

In my last annual report I submitted the medical and surgical statistics of the Regular Army for the calendar year 1898. It was not practicable at that time to present the statistics of the Volunteer Army for the same period. The act of Congress approved April 22, 1898, which authorized the President to raise a volunteer force, required the medical records and reports of these troops to be deposited with the Record and Pension Office. This had accordingly to be done before it was possible for the clerical force at my disposal to use the records for statistical purposes. Arrangements were subsequently made, however, with the chief of that office by which I was enabled to card and check the cases from the sick reports of the State volunteers. It was my desire to have presented these statistics as a supplement to my last annual report, but the work involved in classifying and tabulating so large a number of cases additional to those of the calendar year 1899 could not be completed until my present report became due. I therefore submit in this report the delayed statistics of the volunteer force for 1898, together with those of the Regular and Volunteer armies for the calendar year 1899.

During the year 1898, 217,072 cases of disease and injury were reported by our medical officers serving with volunteer troops. This is equivalent to 2,145.83 admissions to sick report during the year for every thousand men present in the command, or a little over two entries on sick report per man. Of this admission rate 2,037.20 were caused by disease and only 108.63 by injuries. Malarial fevers and diarrheal diseases constituted a little over one-half of the admissions, the rate for the former having been 573.56 and for the latter 453.10. The entries for typhoid fever numbered 16,796, equivalent to an admission rate of 166.03 per thousand men during the year. The rate for yellow fever was 5.58 per thousand; for measles, 61.46, and for smallpox a total of 73 cases gave a rate of only 0.72 per thousand men.

Of the 10,989 injuries reported, one-tenth were considered due to exhaustion from exposure and fatigue. It is an interesting fact that more men were ruptured than injured by gunshot. The former numbered 795, the latter 600, giving rates, respectively, of 7.86 and 5.93 per thousand of strength.

In the Regular Army in 1898 the admission rate, 2,146.94 per thousand of strength, was the same as in the Volunteer Army, but the ratios of the causes of admission were not identical. Disease caused a rate of 1,937.71, and injury 209.23. On account of the service of so large a proportion of the regular troops in Cuba, malarial infection was the cause of nearly one-third of the whole number taken on the sick reports, the admission rate for these diseases having been 694.64 cases for every thousand men of the strength. Diarrheal diseases constituted one-seventh of the cases admitted. The entries for typhoid fever numbered 4,130, equal to 88.56 per thousand men. The rate for yellow fever was 12.95, for measles 25.09, and for smallpox 0.40.

Of 9,758 injuries, only 308 were reported due to exhaustion from exposure and fatigue; 1,457 were gunshot wounds, giving a rate of 31.24 per thousand men, and 255 were cases of hernia, equaling a rate of 5.47.

The total number of discharges for disability in the Volunteer Army was 1,506, equal to an annual rate of 14.89 per thousand men. The rate for disease was 12.60; for injury 2.28. The largest individual rates were for venereal cases, 1.51; for consumption, 1.17; for hernia, 1.13, and for rheumatism 1.11.

The rate of discharge for disability among the regular troops was 11.58 per thousand men—for disease, 7.40; for injury, 4.18. Hernia occasioned a discharge rate of 1.22, rheumatism 1.05, consumption 1.01, and venereal diseases only 0.02.

The total number of deaths among volunteers admitted to sick report in 1898 was 2,851, equal to an annual rate of 28.18 per thousand men. Of these deaths 2,664, or 26.33 per thousand men, were due to disease, and 187, or 1.85 per thousand men, to injuries. Typhoid fever caused the largest number of deaths, 1,738, equivalent to 17.18 deaths per thousand men. Gunshot wounds occasioned 1.17, malarial fevers 1.96, diarrheal diseases 1.29, yellow fever 0.73, and injuries other than gunshot 0.68, leaving 5.17 for distribution among all other causes of fatality to make up the total death rate of 28.18 per thousand men during the year.

With the statements made in the last paragraph the following concerning the regular troops in 1898 may be compared:

The total number of deaths was 1,285, equal to a rate of 27.55 per thousand men. The death rate from disease was 22; from injury, 5.55. The largest individual item in the death rate was 9.74 deaths from typhoid fever in every thousand men. Gunshot wounds occasioned a death rate of 3.94; malarial fevers, 3.24; diarrheal diseases, 2.14; yellow fever, 1.50, and injuries other than gunshot, 1.61, leaving 5.38 for distribution among all other causes of fatality to make up the total death rate of 27.55 per thousand of men for the year.

In the year 1897, a year of peace, the death rate from all causes was 5.11, and the average annual rate for the previous decade was 6.99. The contrast here requires no comment.

In 1898 the volunteer troops serving in the Philippine Islands had the lowest admission rate, 1,832.10 per thousand of strength; those serving in Cuba the highest, 4,070.34, while the rate in Porto Rico, 2,175.92, did not differ much from that of the troops in the United States, 2,071.65. The high rate in Cuba was due to the excessive prevalence of malarial fevers, the rate for which alone amounted to 2,555.02, and yellow fever added 121.72 to the rate; but the admission rates for most other diseases were either not in excess or were actually lower than those of the Volunteer Army as a whole. Thus the rate for diarrheal diseases was 372 as compared with 453.10 among the volunteers generally, and that for the diseases of the respiratory organs was 43.88 as compared with 134.02. The volunteers in Cuba had also the highest death rate, equivalent to 86 per thousand of strength, the rate for disease being 73.65 and for injury 12.35, gunshot wounds having contributed 11.91 of the 12.35. The fatal diseases were typhoid fever, which caused a death rate of 22.05 per thousand men; yellow fever, which occasioned a rate of 15.88; malarial fevers, 14.77, and diarrheal diseases, 9.26, these four items constituting 61.96 of the total rate for disease—73.65.

Among the regular troops in Cuba in 1898 the death rate was exceedingly high, 98.16 per thousand men as compared with their admission rate of 2,631.76. This means that during their service on this island slight cases were infrequent, or, which is more likely, were not taken upon sick report. The death rate from disease was 61.15; from injuries, 37.01, gunshot wounds having contributed 33.33 of the latter rate. The fatal diseases were typhoid fever, which caused a death rate of 14.17; yellow fever, which occasioned a rate of 17.57; malarial infections 13.12, and diarrheal diseases 9.97.

The volunteers in Porto Rico in 1898 had a death rate of 52.09, of which 49.43 was caused by disease. Typhoid fever was the deadly factor, it being held responsible for 40.66 deaths per thousand of strength. But for this epidemic of typhoid fever among these troops their medical record would have been comparatively good.

The regular troops also suffered from this epidemic, their total death rate having been 41.45 and their rate from disease 39.38, of which 22.80 was caused by typhoid fever and 5.70 by malarial diseases.

The volunteer troops serving in the Philippines in 1898 had an admission rate of 1,832.10 per thousand men, 1,719.73 from disease, and 112.36 from injury; 422.47 from malarial diseases, and 398.63 from diarrheal diseases. The death rate, 24.70 per thousand men, was constituted by 21.27 occasioned by disease and 3.43 by injury, 2.86 of the latter being the results of gunshot injuries. Typhoid fever caused deaths equivalent to 9.28 per thousand for the year; diarrheal diseases, 2.86; smallpox, 2.14, and malarial fevers, 1.43.

Among the regular troops the death rate in the Philippines was 22.74, 18.60 from disease and 4.13 from injury, 3.10 of the latter from gunshot. Typhoid fever caused a death rate of 7.58; smallpox, 2.07, and malarial fevers and diarrheal diseases 1.72 each.

Among volunteers serving in the United States in 1898 the death rate amounted to 24.41 per thousand of mean strength for the year, of which 23.29 was due to disease and 1.11 to injury. Typhoid fever was the prominent cause of death, 16.59 of the total rate having been reported as due to it. The rate caused by malarial fevers was 1.26, by pneumonia 1, and by diarrheal diseases 0.60.

The death rate of the regulars in the United States in 1898 was 20.14, 17.45 from disease and 2.69 from injuries, of which 1.21 were from gunshot. Typhoid fever caused a rate of 8.79; malarial fevers, 2.24, and diarrheal diseases, 1.39. A large proportion of the cases which gave the high death rate from disease were imported by the regular troops from Cuba.

### HEALTH OF THE ARMY IN 1899.

During the calendar year 1899 there were 229,885 admissions to sick report recorded in a mean strength of 105,546 regulars and volunteers. This is equivalent to a rate of 2,178.06 per thousand of strength, as compared with 2,146.18 per thousand during the year 1898 and with 1,236.66, the mean annual rate of the decade 1888–1897. Of the admission rate for the year, 714.99 was constituted by malarial diseases, 380.69 by diarrheal diseases, and 192.48 by injury, of which 21.56 admissions per thousand men resulted from gunshot. Typhoid fever contributed only 20.69 cases per thousand of strength. Of the admission rate for 1898, malarial fevers constituted 611.78, diarrheal diseases 388.62, injuries 140.38, of which only 13.92 resulted from gunshot. Typhoid fever contributed 141.59 cases per thousand of strength.

The number of discharges for disability in 1899, 2,320, constituted 21.98 per thousand of the strength, as compared with 14.13 in 1898 and with 16.57, the mean annual rate of the preceding ten years. The principal causes and the rates contributed by each were: Gunshot wounds

2.14, other injuries 2.33, venereal diseases 2.61, consumption 1.80, rheumatism 1.52, heart disease 1.37, malarial diseases 1.10, and diarrheal diseases 0.90. The principal causes of the discharge rate of 1898 were: Gunshot wounds 0.77, other injuries 2.11, rheumatism 1.15, consumption 1.12, venereal diseases 1.05, diarrheal diseases 0.44, and malarial fevers 0.43.

The deaths in 1899 amounted to 1,945, equal to a rate of 18.43 per thousand, as contrasted with 27.99 during the year 1898 and with 6.69, the mean of the preceding decade. The principal causes of death and the rates per thousand men contributed by them were: Gunshot wounds 5.10, other injuries 1.57, typhoid fever 2.44, diarrheal diseases 2.14, malarial diseases 0.99, pneumonia 0.94, and variola 0.80. The prominent causes of death and the rates contributed by them in 1898 were: Typhoid fever 14.83, gunshot wounds 2.04, other injuries 0.98, diarrheal diseases 1.45, malarial infections 0.97, and pneumonia 0.92.

Troops serving in Cuba had the highest rate of admission, 2,749.74 per thousand, as against 3,413.54 per thousand in 1898, the result of exposures during the active service of the Santiago campaign. The lowest admission rate during the past year, 1,677.51, was given by troops serving in the United States, but this, which must be regarded as a high rate when contrasted with the rates of the preceding years of peace, together with the still higher rate, 2,062.82, given by troops in the United States in 1898, was due to sickness brought home from service in the islands. The high rate of discharge for disability at the home stations is attributable to the same cause. The highest death rate during the past year, 30.58 per thousand men, was reported from the Pacific Islands. One-half of this was caused by injuries, gunshot injuries being responsible for the death of 12.60 men per thousand of strength. The highest death rate in 1898, 91.55 per thousand, was reported from Cuba; of this rate, 67.94 was caused by disease and 23.61 by injury, gunshot injury being responsible for the death of 21.69 men per thousand of strength.

*Rates of the regulars and volunteers in 1899 compared.*—During this year from the Regular Army, having a mean strength of 64,446 officers and men, there was admitted to sick report a total of 150,949 cases. This is equal to a rate of 2,342.26 per thousand of strength. Of this rate, 2,125.74 was due to disease and 216.52 to injury. Malarial diseases occasioned 633.31 of the admission rate; diarrheal diseases, 414.39. Typhoid fever caused a total of 1,481 entries, equivalent to 22.98 per thousand men. Measles gave a rate of 23.54 and smallpox a rate of 2.11 per thousand men. Of 13,954 injuries, 762 were due to fatigues and exposures, making a rate of 11.82 per thousand of strength; 1,016 cases, or 15.76 per thousand men, were gunshot injuries, and 488, or 7.57 per thousand, were cases of hernia.

During the year 1899, 78,936 cases of disease and injury were reported as having occurred in the Volunteer Army, the mean strength of which was 41,100. This is equivalent to an admission rate of 1,920.49 per thousand men, or rather less than 2 entries per man during the year. Of this rate, 1,765.72 was caused by disease and 154.77 by injury. Malarial diseases occasioned one-fourth of the admissions, the rate for these diseases being 482.02; diarrheal diseases also were prevalent, the rate being 337.26, but both of these rates are considerably smaller than the corresponding rates of 1898. The entries for typhoid fever numbered 703, equal to an admission rate of 17.10 per thousand men. Only 5 cases of yellow fever appear upon the records of this year. Measles gave a rate of 30.12 per thousand men, and 211 cases of smallpox occasioned a rate of 5.13 per thousand. Of 6,361 injuries reported, 714 were due to fatigues and exposures, making a rate of 17.37 cases per thousand of strength; 1,260 cases, or 30.66 per thousand men, were gunshot injuries, and 317, or 7.71 per thousand, were cases of hernia.

Discharges of regular soldiers on account of disability in 1899 amounted to 1,767 cases, 372 of which were cases of injury, equal to the respective rates of 27.42 and 5.77 per thousand of strength. Venereal diseases caused 3.19 of the total rate; gunshot wounds, 2.73; consumption, 2.30; heart disease, 1.88; rheumatism, 1.72, and hernia, 1.49.

The discharges on account of disability in the Volunteer Army amounted to a total of 553 cases, equal to a rate of 13.45 per thousand of strength, of which 11.02 was due to disease and 2.43 to injury. Venereal diseases caused 1.71 of this rate; gunshot wounds, 1.22; rheumatism, 1.12; consumption, 1.02, and hernia, 0.71.

The number of deaths from all causes among the troops of the Regular Army amounted to 1,202, equivalent to 18.65 per thousand of strength; 380 of the deaths, constituting 5.90 of the total death rate, were due to injury and 248, or 3.85 per thousand, to gunshot wounds. The principal diseases which caused this mortality were typhoid fever, with 180 deaths, giving a rate of 2.79 per thousand men, and diarrheal diseases, with 152 deaths, causing a rate of 2.36.

The number of deaths reported from the Volunteer Army was 743, of which 324 were due to injuries and 419 to disease. The death rate from all causes was 18.08; from disease, 10.20; from injuries, 7.88. The principal causes of this mortality were diarrheal diseases, which contributed 1.95 to the rate; typhoid fever, 1.90; smallpox, 1.44; pneumonia, 1.22; malarial fevers, 1.05, and gunshot injuries, 7.06.

The regular troops in Cuba in 1899 had a mean strength of 11,969 officers and men, from which 35,401 cases were admitted to sick report, the equivalent of 2,957.73 per thousand of strength. Of this rate, 2,690.77 was due to disease and 266.94 to injuries, only 3.09 being caused by gunshot. Malarial fevers constituted 1,132.76 of the total admission rate; diarrheal diseases, 475.82, and venereal diseases, 171.28. Three hundred and five men were discharged for disability, 234 by disease and 71 by injury, equivalent to the respective rates of 25.48, 19.55, and 5.93 per thousand of strength. Discharge was caused by venereal diseases in 3.25 per thousand of strength, in 2.59 by heart disease, in 2.51 by consumption, and in 1.17 by gunshot wounds. The death rate from all causes was 19.55, of which 17.29 was caused by disease and 2.26 by injury. Typhoid fever occasioned 63 deaths, equivalent to a rate of 5.26 per thousand men; yellow fever, 50 deaths, equivalent to 4.17 per thousand, and malarial infections, 20 deaths, equivalent to a rate of 1.67.

The volunteers in Cuba during this year, with a mean strength of 8,082, had an admission rate of 2,441.72 per thousand, of which 1,047.64 was occasioned by malarial fevers and 372.93 by diarrheal diseases. One hundred and one men were discharged from service on account of disability, 92 from disease, and 9 from injury, equivalent to the respective rates of 12.50, 11.38, and 1.11 per thousand of strength. Malarial diseases caused the relatively high rate of 5.62; venereal diseases, 1.86; consumption, 1.24, and gunshot wounds, 0.25. The death rate from all causes was 16.46, as compared with 86 during the previous year under the influences of war. Disease caused a death rate of 14.97, and injury 1.48. Only 1 death from yellow fever occurred among the volunteer troops during this year, causing a rate of 0.12 per thousand men. Malarial fevers caused the highest death rate, 3.71; typhoid fever, 2.72, and diarrheal diseases, 2.35.

The mean strength of the regulars in Porto Rico in 1899 was 3,347. In this command the admission rate for disease was 2,352.85, for injury 275.48; total, 2,628.33. Diarrheal diseases contributed 582.91 to the total rate, malarial fevers 467.28, and venereal diseases 295.18. The discharges for disability, 72 in number, were equivalent to a rate of 21.51, venereal diseases contributing 6.27 per thousand men. The death rate was only 11.35 per thousand, of which 2.19 was due to injury and only 9.26 to disease. Diarrheal diseases and typhoid fever were the prominent causes, the former having contributed 2.99 and the latter 2.69 to the rate of mortality.

Among the small number, 380, of volunteers in Porto Rico, the admission rate dropped to 1,589.47 and the death rate to 10.53 per thousand of strength, 2.63 of the latter being due to injury and only 7.89 to disease.

The regulars in the Pacific islands, with a mean strength of 22,922 in 1899, had an admission rate of 2,630.92—2,454.10 from disease and 176.82 from injury, of which 39.05 per thousand of strength was the result of gunshot. Diarrheal diseases and malarial infections constituted more than half of the cases, the former having a rate of 728.17 and the latter 705.49, a very considerable increase on the rates of 1898, respectively 431.97 and 429.56. The death rate also was higher, 31.10 per thousand of strength, of which 17.80 was due to disease and 13.30 to injury, 9.60 of the 13.30 being the result of gunshot. Diarrheal diseases caused the deaths of 5.72 men per thousand of strength, typhoid fever 3.58, malarial infections 1.23, smallpox 1, and pneumonia 0.79.

In this year the volunteers also had a higher rate of admission than in 1898, due to an increased prevalence of diarrheal and malarial diseases. The death rate from all causes was equal to a loss of 29.83 men per thousand of strength during the year, but only 11.80 of this was caused by disease. Injuries were responsible for 18.03 of the admission rate, of which 16.81 resulted from gunshot. The prominent fatal diseases were smallpox, which caused 3.36 deaths per thousand men, diarrheal diseases 3.18, typhoid fever 2.20, pneumonia 1.14, and malarial infections 0.43.

The regulars at the home posts had a mean strength of 26,208 in 1899. The admission rate for this command was 1,772.17 per thousand of strength—1,551.47 for disease and 220.70 for injury; 363.37 of the rate was due to malarial infections, mostly the result of foreign service. The death rate was light, only 6.72 from disease and 1.56 from injury; a total of 8.28 per thousand of strength for the year.

The volunteers at the home posts, with a mean strength of 15,984, had an excellent record, which compares favorably with that of the Regular Army in times of peace. The death rate from all causes was only 7.26 per thousand men, 0.94 due to injury and 6.32 to disease. The chief items constituting this death rate were pneumonia 2.38, typhoid fever 1.19, diarrheal diseases 0.38, and malarial fevers 0.37.

The following tabulation presents many interesting points relating to the mortality among our troops during the past two years:

*Annual death rates per thousand of strength among volunteer and regular troops serving in Cuba, Porto Rico, the Philippine Islands, and the United States during the years 1898 and 1899.*

| Deaths. | Cuba. | | | | Porto Rico. | | | |
|---|---|---|---|---|---|---|---|---|
| | 1898. | | 1899. | | 1898. | | 1899. | |
| | Volunteers. | Regulars. | Volunteers. | Regulars. | Volunteers. | Regulars. | Volunteers. | Regulars. |
| All causes | 86.00 | 98.16 | 16.46 | 19.55 | 52.09 | 41.45 | 10.53 | 11.85 |
| All injuries | 12.85 | 37.01 | 1.48 | 2.26 | 2.66 | 2.07 | 2.63 | 2.09 |
| Gunshot injuries | 11.91 | 33.33 | .62 | .92 | 1.86 | 1.04 | ........ | .60 |
| All diseases | 73.65 | 61.15 | 14.97 | 17.29 | 49.43 | 39.38 | 7.89 | 9.26 |
| Typhoid fever | 22.05 | 14.17 | 2.72 | 5.26 | 40.66 | 22.80 | 2.63 | 2.69 |
| Yellow fever | 15.88 | 17.57 | .12 | 4.17 | ........ | ........ | ........ | ........ |
| Smallpox | ........ | ........ | .25 | .08 | .27 | .52 | ........ | ........ |
| Malarial fevers | 14.77 | 13.12 | 3.71 | 1.67 | 2.92 | 5.70 | ........ | ........ |
| Diarrheal diseases | 8.60 | 9.97 | 2.35 | .83 | 1.06 | 2.07 | ........ | 2.99 |
| Pneumonia | .66 | .26 | 1.36 | .75 | .27 | .52 | ........ | .30 |

| Deaths. | Philippine Islands. | | | | United States. | | | |
|---|---|---|---|---|---|---|---|---|
| | 1898. | | 1899. | | 1898. | | 1899. | |
| | Volunteers. | Regulars. | Volunteers. | Regulars. | Volunteers. | Regulars. | Volunteers. | Regulars. |
| All causes | 24.70 | 22.74 | 29.83 | 31.10 | 24.41 | 20.14 | 7.26 | 8.28 |
| All injuries | 3.43 | 4.13 | 18.03 | 13.30 | 1.11 | 2.69 | .94 | 1.56 |
| Gunshot injuries | 2.86 | 3.10 | 16.81 | 9.60 | .43 | 1.21 | .62 | .57 |
| All diseases | 21.27 | 18.60 | 11.80 | 17.80 | 23.29 | 17.45 | 6.32 | 6.72 |
| Typhoid fever | 9.28 | 7.58 | 2.20 | 3.58 | 16.59 | 8.79 | 1.19 | .99 |
| Yellow fever | ........ | ........ | ........ | ........ | .01 | .08 | ........ | .11 |
| Smallpox | 2.14 | 2.07 | 3.36 | 1.00 | ........ | ........ | .12 | .04 |
| Malarial fevers | 1.43 | 1.72 | .43 | 1.23 | 1.26 | 2.24 | .37 | .12 |
| Diarrheal diseases | 2.86 | 1.72 | 3.00 | 5.72 | .60 | 1.39 | .38 | .04 |
| Pneumonia | 1.14 | .69 | .06 | .79 | 1.00 | .92 | 2.38 | .80 |

*Relative prevalence of disease among white and colored troops.*—During the past two years the rates of admission to sick report and of discharge for disability were practically the same among the white and the colored troops. The death rates from all causes were, however, somewhat lower among the latter, notwithstanding a loss of 5.13 per thousand of strength from injury in 1898, as against 2.91 among the white troops.

Although the admission rates were practically the same for both races, some differences may be observed in the items which make up the totals. Thus the colored troops had relatively fewer cases of measles, mumps, smallpox, diphtheria, cerebro-spinal fever, typhoid fever (see page 734), and alcoholism, with considerably less of diarrheal diseases, than the white troops. For alcoholism the rates of admission were only 2.94 and 5.65 in 1898 and 1899 among the colored troops, as compared with 8.95 and 15.11 among the white troops. For diarrheal diseases the rates of the colored troops during these two years were 168.11 and 164.96, as compared with 400.24 and 395.99 among the whites. On the other hand, the negro troops slightly exceeded the white troops in their admission rates for yellow fever, malarial fevers, erysipelas, rheumatic fever, consumption (see page 784), diseases of the respiratory organs, and very considerably in their rates for venereal diseases. Among the colored troops in Cuba in 1898 there were 232 cases of yellow fever, with 36 deaths, giving the respective rates of 146.19 and 22.68 per thousand of strength, while the corresponding rates for the white troops serving in Cuba at the same time were 132.58 and 15.24. It is to be noted, however, that the unusual prevalence of this disease among the colored troops was due to special influences affecting one regiment, the Twenty-fourth United States Infantry. One hundred and sixty-seven of the cases and 23 of the deaths occurred in this regiment, concerning which Col. Charles R. Greenleaf, assistant surgeon-general, United States Army, reported, August 24, 1898:

> I was much embarrassed in taking care of the sick by the lack of nurses and proper guards, and applied twice to the general commanding the Fifth Army Corps for troops to perform this duty, but he declined to furnish them. On my appeal to General Miles, however, he promptly ordered the whole of the Twenty-fourth Infantry to report to me for duty. This regiment made a night march, arriving at Siboney early the next morning. The necessity for aid was so urgent that I requested the commanding officer to call for volunteers from that regiment to serve in the yellow fever hospitals. This request brought forth a prompt response, more that twice the number of men required volunteering for this perilous duty. I desire to bring to the notice of the General Commanding the Army the conduct of these men. The cheerfulness with which they did their duty under the most adverse circumstances, and the promptness with which they volunteered for any service with the sick deserves, in my opinion, a special commendation.

An excess of malarial infections among the colored troops is observed in the statistics for the years 1898 and 1899, when the rates for the white and the colored troops of the whole Army are compared. The admissions for the white troops were equal to an annual rate of 591.44, and for the colored troops to a rate of 675.77, per thousand men of each race. This, however, does not imply a greater susceptibility on the part of the colored men, but is referable to the fact that during a part of the time all the colored regiments were exposed to Cuban malaria, while only a relatively small proportion of the large force of white troops was similarly exposed. To ascertain relative susceptibility of the two races we must compare the rates of troops operating in the same malarious localities. In 1898 the admission rate for malarial diseases of the Regular Army in Cuba, including two infantry and two cavalry regiments of colored troops, was 1,174.94 per thousand of strength, but the rate of the colored regiments was only 768.53.

Venereal diseases in 1898 caused 149.58 admissions per thousand of strength among the colored men, and in 1899 195.92, as against 78.48 and 128.59 among the white troops during these years.

*Seasonal prevalence of disease.*—With a mean monthly admission rate of 165.46 for all diseases in 1899, the seasonal curve for the Army as a whole began in January with the high rate of 178.04 per thousand of strength. It fell in February and March, and in April reached a minimum of 140.54. During the next four months the rate rose to the maximum of the year, 179.78, in August. In September the rate fell below the mean, but rose to about the level of the latter during the last three months of the year. There is little to be learned from a study of this curve of prevalence, for the climatic and other influences which affected it were too complex to be considered from this point of view.

Even when we compare the prevalence of disease among troops in the United States in 1899 with the recorded prevalence in former years, differences are found which are evidently not due to climatic conditions in this country, but to previous service of the troops in other climates.

During the decade 1888–1897 the monthly admission rate was usually high in January from influenza and bronchitic attacks. From this point it fell to a minimum in April, after which it rose, slowly during May and June, and rapidly in July and August, to the maximum of the year. It remained high in September, but fell again during the last three months of the annual period. The wave of prevalence during the months of July, August, and September was due to malarial diseases. Prior to the decade mentioned this autumnal wave was larger than in recent years, and there was frequently a slight prominence in the curve in May or June, corresponding with a sudden increase of cases of intermittent fever. During the past year the curve of prevalence of disease among United States troops in garrison in the United States changed considerably from the characteristic curve of former years. The mean monthly rate of admission was 124.73, due to large rates in January, February, and March; the maximum in January, 180.61. The rates of all the other months were below the mean, the lowest having occurred in July and December, 80.84 and 80.38. The large rates of the first three months of the year were caused in part by diseases of the respiratory organs, and very considerably by recurrences of malarial affections contracted in Cuba and Porto Rico during the year 1898. The death rate was above the mean monthly rate of the year during the first five months and below the mean during the remaining months. The larger death rates of the earlier months were due to pneumonia and typhoid fever.

The following table shows the prominence of certain diseases among the troops stationed in the United States in 1899. Similar tables relating to troops in the Philippines, Cuba, and Porto Rico will be found on pages 597, 677, and 697.

| Diseases. | January. | | | | February. | | | | March. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 82 | 0.91 | 12 | 0.13 | 19 | 0.33 | 3 | 0.05 | 21 | 0.44 | 1 | 0.02 |
| Malarial infections | 3,161 | 35.05 | 1 | .01 | 1,721 | 29.94 | 1 | .02 | 1,412 | 29.61 | 1 | .02 |
| Undetermined fevers | 60 | .67 | ... | ... | 38 | .66 | ... | ... | 19 | .40 | ... | ... |
| Rheumatic affections | 683 | 7.57 | ... | ... | 374 | 6.51 | ... | ... | 269 | 5.64 | 1 | .02 |
| Consumption | 17 | .19 | 4 | .04 | 16 | .28 | 1 | .02 | 12 | .25 | ... | ... |
| All venereal diseases | 1,078 | 11.95 | ... | ... | 620 | 10.78 | ... | ... | 502 | 10.53 | ... | ... |
| Alcoholism and direct results | 97 | 1.08 | 3 | .03 | 72 | 1.25 | 1 | .02 | 44 | .92 | ... | ... |
| Diarrheal diseases | 497 | 5.51 | ... | ... | 232 | 4.04 | ... | ... | 245 | 5.14 | 1 | .02 |
| Pneumonia | 112 | 1.24 | 17 | .19 | 73 | 1.27 | 13 | .23 | 70 | 1.47 | 17 | .36 |
| Total respiratory | 2,866 | 31.78 | 17 | .19 | 1,577 | 27.43 | 13 | .23 | 1,208 | 25.33 | 17 | .36 |
| All diseases | 16,286 | 180.61 | 65 | .72 | 8,605 | 149.69 | 39 | .68 | 7,245 | 151.90 | 34 | .71 |

| Diseases. | April. | | | | May. | | | | June. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 34 | 0.71 | 7 | 0.15 | 34 | 1.04 | 5 | 0.15 | 27 | 1.05 | 1 | 0.04 |
| Malarial infections | 1,311 | 27.47 | 3 | .06 | 898 | 27.58 | ... | ... | 410 | 16.00 | ... | ... |
| Undetermined fevers | 47 | .98 | ... | ... | 21 | .64 | ... | ... | 18 | .70 | ... | ... |
| Rheumatic affections | 208 | 4.36 | ... | ... | 201 | 6.17 | ... | ... | 155 | 6.05 | ... | ... |
| Consumption | 6 | .13 | 2 | .04 | 11 | .34 | 4 | .12 | 7 | .27 | ... | ... |
| All venereal diseases | 447 | 9.37 | ... | ... | 359 | 11.03 | ... | ... | 333 | 13.00 | ... | ... |
| Alcoholism and direct results | 43 | .90 | 4 | .08 | 43 | 1.32 | 1 | .03 | 36 | 1.41 | ... | ... |
| Diarrheal diseases | 378 | 7.92 | ... | ... | 307 | 9.43 | ... | ... | 310 | 12.10 | ... | ... |
| Pneumonia | 39 | .82 | 5 | .10 | 14 | .43 | 2 | .06 | 7 | .27 | ... | ... |
| Total respiratory | 719 | 15.07 | 6 | .13 | 373 | 11.46 | 2 | .06 | 176 | 6.87 | ... | ... |
| All diseases | 5,358 | 112.26 | 38 | .80 | 3,837 | 117.84 | 25 | .77 | 2,676 | 104.44 | 10 | .39 |

| Diseases. | July. | | | | August. | | | | September. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 39 | 1.19 | 1 | 0.03 | 41 | 1.09 | 2 | 0.05 | 111 | 2.49 | 5 | 0.11 |
| Malarial infections | 414 | 12.59 | ... | ... | 984 | 26.25 | ... | ... | 980 | 21.94 | 3 | .07 |
| Undetermined fevers | 22 | .67 | ... | ... | 44 | 1.17 | ... | ... | 34 | .76 | ... | ... |
| Rheumatic affections | 106 | 3.22 | ... | ... | 162 | 4.32 | ... | ... | 171 | 3.83 | ... | ... |
| Consumption | 15 | .46 | 2 | .06 | 7 | .19 | ... | ... | 12 | .27 | 1 | .02 |
| All venereal diseases | 328 | 9.97 | ... | ... | 375 | 10 | ... | ... | 329 | 7.37 | ... | ... |
| Alcoholism and direct results | 31 | .94 | ... | ... | 32 | .85 | ... | ... | 51 | 1.14 | ... | ... |
| Diarrheal diseases | 459 | 13.96 | 1 | .03 | 700 | 18.68 | ... | ... | 456 | 10.21 | 2 | .04 |
| Pneumonia | 16 | .49 | 1 | .03 | 10 | .27 | 1 | .03 | 11 | .25 | ... | ... |
| Total respiratory | 151 | 4.59 | 1 | .03 | 213 | 5.68 | 1 | .03 | 253 | 5.66 | 2 | .04 |
| All diseases | 2,658 | 80.84 | 12 | .36 | 4,178 | 111.46 | 5 | .13 | 3,922 | 87.81 | 16 | .36 |

| Diseases. | October. | | | | November. | | | | December. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 29 | 0.73 | 5 | 0.13 | 15 | 0.52 | 1 | 0.03 | 6 | 0.28 | 2 | 0.09 |
| Malarial infections | 561 | 14.19 | ... | ... | 279 | 9.59 | ... | ... | 142 | 6.64 | ... | ... |
| Undetermined fevers | 30 | .76 | ... | ... | 13 | .45 | ... | ... | 6 | .28 | ... | ... |
| Rheumatic affections | 256 | 6.47 | ... | ... | 182 | 6.26 | ... | ... | 150 | 7.01 | ... | ... |
| Consumption | 16 | .40 | 1 | .03 | 13 | .45 | ... | ... | 2 | .09 | ... | ... |
| All venereal diseases | 420 | 10.62 | ... | ... | 344 | 11.83 | ... | ... | 238 | 11.13 | ... | ... |
| Alcoholism and direct results | 28 | .71 | 1 | .03 | 58 | 1.99 | ... | ... | 33 | 1.54 | 2 | .09 |
| Diarrheal diseases | 271 | 6.85 | 2 | .05 | 106 | 3.64 | ... | ... | 66 | 3.09 | 1 | .05 |
| Pneumonia | 22 | .56 | 2 | .05 | 18 | .62 | 1 | .03 | 9 | .42 | ... | ... |
| Total respiratory | 394 | 9.96 | 2 | 05 | 366 | 12.59 | 1 | .03 | 241 | 11.27 | ... | ... |
| All diseases | 3,783 | 95.66 | 14 | .35 | 2,888 | 99.30 | 8 | .28 | 1,719 | 80.38 | 11 | .51 |

## CAMPS OF UNITED STATES VOLUNTEER REGIMENTS IN THE UNITED STATES.

In preparing the camps in which the United States volunteer regiments were organized the utmost care was taken to provide for the comfort and well-being of the men. The tentage consisted, generally, of conical wall tents, with an average of 8 men to a tent. The streets were wide and the tents along each side were placed at the width of a tent apart. All the tents were floored, the flooring well raised from the ground. Special latrines were provided, the contents of which were regularly flushed into a sewerage system or emptied by an odorless excavator. Policing was done by civilian labor. Water supplies were furnished from good sources and delivered by faucet in convenient places. Bath houses, with hot and cold water, gave the needful facilities for personal cleanliness. The kitchens and mess rooms were carefully supervised and the general sanitary conditions were excellent. I submit in this place two reports, one showing the condition of the Thirty-Fifth, the other of the Forty-Fifth United States Volunteer Infantry.

### REPORT ON THE SANITARY CONDITION OF THE THIRTY-FIFTH UNITED STATES INFANTRY VOLUNTEERS, AT VANCOUVER BARRACKS, WASH., AUGUST 31, 1899, BY MAJ. R. G. EBERT, SURGEON, UNITED STATES ARMY.

The camp as now occupied was partially planned for the muster out of the Second Oregon. The tentage and grounds of the First Battalion and the field hospital in the post hospital inclosure were erected for that purpose. The various camp sites are on a gentle southern slope, with a fall of about 4 feet per 100, soil gravelly, covered with natural sod, readily absorbing moisture, and, with the exception of the neighborhood of the latrines of the Second Battalion, well drained, as proved by recent storms. Camp of Third Battalion is entirely in the open; of Second adjoining a small grove of locusts and some scattering maples; of First in the open ground. Tentage is all floored and raised above the ground. Second and Third battalions are in Sibleys, with 8 or 9 men in a tent; First Battalion in A wall tents, 3 men to a tent. Bedsacks and straw are furnished. At present no means of heating is provided, though floors are arranged for Sibley stoves in the conical wall tents.

The kitchens are beneath open sheds, 12 by 12 feet, and have complete field outfits; mess sheds, 60 by 20 feet, at opposite end of street to latrines. Ample tables and benches are provided for each organization. Water at each kitchen, the hydrant being under absolute control of cook, by removal of handle of faucet and placing it in his charge to prevent unauthorized use and consequent muddiness of ground; drippings caught in buckets. Meat safes, 48 by 36 by 30 inches, with screened sides and doors, located above ground, have been furnished, to prevent contamination of food by flies and to allow free access of air. Kitchen refuse, when not burned, is placed in a covered receptacle, which is emptied twice daily, or oftener if necessary; barrels scalded at each emptying and washed with hydrate of lime; attention is also given to the cleanliness of lids and the outer surface of barrels. All refuse of kitchen is removed in closed sanitary carts and dumped in the deep water of the Columbia River. Thorough cleanliness of all surroundings of kitchen and camp is constantly dwelt upon, and when ground is accidentally soiled by spilling of dishwater it is immediately covered with fresh earth or ashes.

Each company of the Second and Third battalions has latrines 10 by 20 feet, accommodating 14 persons. This consists of two zinc-lined troughs, 14 feet by 25 by 17 inches, with a fall of 4 inches, to assure free flushing. Water is admitted at upper end by faucet, while the escape into sewer, properly trapped, is by "Demorest valve." Both entrance and outflow are under control of civilian employees, being guarded by lock and key to prevent unauthorized meddling. The troughs are emptied twice daily, the water standing at least 3 inches deep in the shallowest places, mixed with hydrate of lime, and this is stirred at frequent intervals (paddles or brooms kept in a solution of lime). Toilet paper only is allowed to be used, and is supplied freely by the Quartermaster's Department. Urinals, constantly flushed with water and properly "limed," are connected direct with sewer, with due precaution as to trapping. Sewer ventilation is by standpipe, extending above each latrine.

The First Battalion has but two latrines, one for each two companies; these having been constructed earlier, have smaller troughs, but are similar in sanitary arrangement. Urine tubs, two to each company, provided with hydrate of lime, are placed in streets at tattoo and removed and cleaned at reveille. The commanding officer of the regiment has been requested to give necessary orders for their proper use.

On the outer wall of each latrine a zinc-lined trough 20 feet by 18 by 4 inches, water supplied by four faucets, serves for lavatory purposes. Three companies of the First Battalion have lavatory at different places than latrines, but all are connected with sewer. The latrines and police of grounds are attended to by civilian employees of the Quartermaster's Department. One caldron of 75 gallons' capacity is furnished each battalion for laundry purposes. The bath room is a model, and a permanent addition to the post. The building is well constructed and is 23 by 40 feet, with annex 16 by 25 feet for steam tubular boiler of 40-horsepower capacity (size of boiler, 44 inches in diameter and 10 feet long). The system is the "Gegenstrom." On a concrete floor, sloping to a central drain properly trapped and connected with sewer, are erected 48 closets, each 3 by 4 feet, 12 each on north and south wall directly facing similar ones in the center of the building. Those in the center are for bathing, and those on the outer wall for dressing. Shower baths, temperature from 52 to 115 degrees, can be given to either 4 or 24 men at one time. The regulation of temperature and the flow of water is in the hands of a civilian attendant, a thermometer showing the absolute degree of heat. Allowing four minutes each for undressing and dressing, and six minutes for bathing, the capacity of the house is 96 men per hour. Baths are now ordered at from 93 to 95 degrees, finishing with a final dash of cold water. The house is open from 8 a. m. to 5 p. m. All closets being on iron supports 6 inches above the ground, thorough cleanliness is assured. Steam radiators will be necessary in the winter. Ventilation is properly provided.

The food supply is that authorized by regulations, and is of good quality. The post bakery is furnishing bread, but its capacity is hardly equal to the demand, and in the rapid baking the bread has not always been the best. Field ovens should be established, or if a permanent increase in the strength of the command to present proportions is contemplated, then an addition to the present plant should be made. The cooking, as a rule, is satisfactory. Some of the recruits stated that food was insufficient; this complaint is probably based on the fact that the exercise of drill has caused a more healthy assimilation in the sluggish, and possibly some temporary lack of experienced management while companies were being organized may have been in operation. Frequent inspections have shown but few instances where this complaint was justified, and never in an organized company. Attention has been invited to restricting men in the indulgence of unripe fruit, and the sick report has been materially increased by the nonobservance of this matter.

The water supply of this post can be brought to 320,000 gallons per day. Former analyses show it almost absolutely pure, and for the present strength of command it is more than ample.

The clothing issued is not entirely satisfactory. Leggings are of poor material and workmanship; complaint has been made of the eyelet pulling out and the straps breaking. Shoes, both black and russet, are too low in the instep for many individuals. Socks are said to be of inferior quality. Some complaint has been made of the blouses, both in regard to quality and workmanship. To recruits just joining there should be an issue of towels, as without them and with no money to buy, it seems that cleanliness must suffer. The khaki is said to be of good quality; the same can be said of underclothing and blankets.

Habits of the men seem to differ as to the locality from which they were recruited. As a rule, the men from the Western States are a more desirable class. Under the constant drill and discipline imposed by the commander of the Thirty-fifth Infantry, there is a daily improvement not only in the soldierly appearance, but in the moral tone.

Besides the Thirty-fifth Infanty, there are at this post 538 volunteer recruits. These are quartered in barracks and organized into casual companies. The number of men assigned to each building is in excess of that for which the building was intended, and to remove any possible bad effect of overcrowding, it has been recommended that all upper sashes of windows be lowered at least 4 inches, to insure an abundance of fresh air. As soon as these recruits are received at post they are bathed, but owing to an insufficient supply of clothing—it having been expected that but 1,309 men would be sent here—these men are waiting for uniforms, for which telegraphic requisitions have been duly made.

The sanitary condition of the post is shown as follows: Regulars present, 132; sick, 0. Volunteers present, 1,859; sick, 27. Of these 27 cases 7 are injuries, 4 venereal diseases, 6 malarial diseases, and 10 miscellaneous.

## SANITARY CONDITION OF THE CAMP OF THE FORTY-FIFTH UNITED STATES INFANTRY VOLUNTEERS, AT FORT SNELLING, MINN., SEPTEMBER 27, 1899, REPORTED BY LIEUT. COL. H. R. TILTON, CHIEF SURGEON, DEPARTMENT OF DAKOTA.

The camp is well located on a high plateau, and extends in a northeast and southwest direction. The surface covered by the companies and band measures 172 feet by 988 feet. The entire camp, including regimental headquarters, battalion officers' tents, companies, and latrines, occupies a surface of not quite 10 acres. The tentage provided has been most liberal; 14 conical wall tents for each company allows 1 conical tent for 8 men, besides giving a first sergeant a separate tent. The tents have all been provided with floors, and arrangements are being made for heating stoves. Water from the Fort Snelling waterworks has been piped to each company, one faucet being at the company kitchen, the other near the latrines. The latrines have only been in use a short time, and, so far as I observed, they admirably serve the purpose. One difficulty is the supply of toilet paper. For the satisfactory working of the latrines, newspapers and the coarser kinds of paper which float above the surface are objectionable. So soon as a company can provide a fund by saving on surplus rations and profit of the canteen, such necessary articles can be purchased out of the company fund. When a regiment is organizing, with no fund available, some provision ought to be made to bridge over the period intervening until a fund can be made. Now the Subsistence Department is authorized to provide toilet paper for prisoners, but for no other portion of the command. A bath house has been constructed with capacity for 24 shower baths. The boiler has not yet arrived, and until it is put up the men have no facilities for bathing nearer than the barrack bathrooms. A place for washing faces and hands in connection with the bathing arrangements would add much to the comfort of the men, and in this connection hot water should be provided for washing the individual mess kits after each meal. This is usually provided by means of a camp kettle over a pit and open fire, but this requires turning up the soil, and the design in the present camp is to avoid digging up the soil as much as possible.

The company kitchens, as well as the hospital and band, have been provided with the Donavin-Myers field range. This is made of sheet steel with cast-iron top, and measures 21 by 21 by 39 inches, and is a most convenient and economical method for use in the field, although such a range could not be carried with a pack train, while the Buzzacott cooking oven and stove is more portable. I saw the cooking arrangements and the serving of dinner, which was well prepared. The bacon was excellent. The garbage is received in galvanized iron barrels, and contents removed twice daily. The contents of the latrines are removed once daily by means of an odorless excavator. This work is done by a contractor. A galvanized-iron barrel is to be placed in each company street for use as a urinal at night, and removed each morning.

The hospital has the full allowance of tents, and floors were being brought into camp for the hospital, and stoves were also to be put up. Only two mild cases of disease were in the hospital, which is provided with 10 cots. One was a case of intermittent fever and one a case of sore throat. The hospital has its complete outfit of medical and surgical appliances. Two thousand first-aid packages have been called for, and authority has been given to purchase the necessary quicklime and crude carbolic acid for use in all the latrines in camp. The regiment has its authorized 3 hospital stewards and 8 hospital corps privates; 4 more privates will be required to complete the full allowance. All the men in the command have been vaccinated.

The only criticism I have to make as to the arrangement of the camp is that, in my opinion, where the ground will permit, at least 20 acres should be occupied by a regiment of 1,200 men.

## DIVISION OF THE PHILIPPINES

### HEALTH OF THE TROOPS.

In the Philippine Islands, in 1898, with a mean strength of 9,907 regulars and volunteers, the admission rate for all causes of disability was 1901.99 per thousand of strength; for disease, 1776.72; for injury, 125.26; for gunshot injury, 13.02. The death rates corresponding to these admission rates were respectively 24.12, 20.49, 3.63, and 2.93. Malarial fevers contributed the largest proportion, 424.55, to the admission rate, but only 1.51 to the death rate. Typhoid fever, though forming only 83.77 of the admission rate, caused 8.78 of the 20.49 deaths from disease per thousand of strength, the cases numbering 830 and the deaths 87. Diarrheal diseases gave an admission rate of 399.60, with a death rate of 2.52 per thousand men. The number of cases was 3,959 and deaths 25. Seventy-five cases of smallpox, of which 21 were fatal, gave rates, respectively, of 7.57 and 2.12 per thousand of strength.

In 1899, with a mean strength of 39,280 regulars and volunteers, the admission rate for all causes of disability was 2395.52 per thousand of strength; for disease, 2206.36; for injury, 189.16; for gunshot injury, 52.26. The death rates corresponding to these admission rates were, respectively, 30.58, 15.28, and 12.60. Although the admissions for disease were considerably increased during this year, 2206.36 per thousand men as compared with 1776.72 in 1898, and although the death rate from all causes 30.58 as compared with 24.12 in 1898, the death rate from disease became reduced from 20.49 to 15.30 per thousand men. The increased admission rate was due to diarrheal diseases, malarial infections, and injuries. Diarrheal diseases formed 642.80 and malarial infections 624.37 of the total admission rate. The lessened rate of mortality from disease resulted from a lessened prevalence of typhoid fever, with a consequent lowering of the death rate from that disease. Eight hundred and sixty-two cases of this fever, of which 118 were fatal, gave an admission rate of 21.95 and a death rate of 3 per thousand of strength. The lower death rate was also in part due to the milder character of the malarial infections, the death rate from these diseases being only 0.89 as compared with 1.51 in 1898. These influences lowered the death rate from disease, notwithstanding a very material increase in the malignity of the diarrheal diseases, which gave a death rate of 4.58 per thousand men as compared with 2.52 during 1898. The increase in the totality of the death rate was the consequence of active service as expressed by the mortality rate for gunshot injury, 12.60 per thousand of strength as compared with 2.93 during the previous year. Two hundred and sixty-seven cases of smallpox, 78 of which were fatal, gave rates, respectively, of 6.80 and 1.99 per thousand of strength.

*Seasonal prevalence of disease.*—In the Philippine Islands in 1899 the mean monthly rate of admission for disease was 183.86. In January the rate was considerably below this mean. The minimum, 93.08, was reached in February, after which the rates rose slowly in March and April and rapidly in May and June until the maximum, 223.56, was reached in July. The rates fell slowly during the remaining months of the year. The rapid increase from May to July was due partly to malarial infections, but chiefly to diarrheal diseases. Lessened prevalence of the latter during the later months lowered the rate of admission, notwithstanding continued high rates for malarial infections. But it can not be inferred from these records that the first four months of the year constitute the healthy season, while the second four are characterized by a maximum prevalence of diarrheal diseases, and the last four by a maximum prevalence of malarial fevers, because among the unsanitary influences affecting the troops during this year were those of active and exhausting field service, which certainly exercised a considerable modifying effect on those of climate and season.

The mean monthly death rate from disease was 1.28 per 1,000 of strength. The rate was considerably below this during March, April, May, and June. In July and December the rates differed but little from the mean. During the other months they were higher than the mean, that for September, 1.84, being the highest; and all may be said to have been due to the increased fatality of diarrheal diseases. The following table shows the prevalence of certain diseases by months in these islands:

*Seasonal prevalence of disease among troops in the Philippine Islands during the calendar year 1899.*

| Diseases. | January. | | | | February. | | | | March. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 44 | 1.93 | 6 | 0.26 | 24 | 0.84 | 5 | 0.17 | 34 | 1.14 | 5 | 0.17 |
| Malarial infections | 572 | 25.05 | .... | ........ | 591 | 20.60 | .... | ........ | 955 | 32 | .... | ........ |
| Undetermined fevers | 70 | 3.07 | .... | ........ | 48 | 1.67 | .... | ........ | 55 | 1.84 | .... | ........ |
| Rheumatic affections | 148 | 6.48 | .... | ........ | 141 | 4.92 | .... | ........ | 259 | 8.68 | .... | ........ |
| Consumption | 8 | .35 | .... | ........ | 2 | .07 | 1 | .03 | 11 | .37 | 1 | .03 |
| All venereal diseases | 302 | 13.23 | .... | ........ | 283 | 9.87 | .... | ........ | 313 | 10.49 | .... | ........ |
| Alcoholism and direct results | 18 | .79 | .... | ........ | 3 | .10 | .... | ........ | 17 | .57 | .... | ........ |
| Diarrheal diseases | 468 | 20.50 | .... | ........ | 477 | 16.63 | 6 | .21 | 896 | 30.02 | 5 | .17 |
| Pneumonia | 6 | .26 | .... | ........ | 12 | .42 | 1 | .03 | 3 | .10 | 3 | .10 |
| Total respiratory | 125 | 5.47 | .... | ........ | 213 | 7.43 | 1 | .03 | 229 | 7.67 | 3 | .10 |
| All diseases | 2,793 | 122.32 | 31 | 1.36 | 2,670 | 93.08 | 40 | 1.39 | 3,975 | 133.19 | 29 | .97 |

*Seasonable prevalence of disease among troops in the Philippine Islands during the calendar year 1899*—Continued.

| Diseases. | April. | | | | May. | | | | June. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 50 | 1.56 | 2 | 0.06 | 75 | 2.09 | 12 | 0.33 | 142 | 3.70 | 11 | 0.29 |
| Malarial infections | 922 | 28.85 | 1 | .03 | 1,228 | 34.12 | 2 | .06 | 1,223 | 31.90 | .... | .... |
| Undetermined fevers | 59 | 1.85 | .... | .... | 75 | 2.09 | .... | .... | 73 | 1.90 | .... | .... |
| Rheumatic affections | 256 | 8.01 | .... | .... | 227 | 6.33 | .... | .... | 238 | 6.21 | .... | .... |
| Consumption | 12 | .38 | 2 | .06 | 16 | .45 | .... | .... | 20 | .52 | 2 | .05 |
| All venereal diseases | 349 | 10.92 | .... | .... | 369 | 10.29 | .... | .... | 337 | 8.79 | .... | .... |
| Alcoholism and direct results | 14 | .42 | .... | .... | 21 | .59 | 2 | .06 | 10 | .26 | .... | .... |
| Diarrheal diseases | 1,280 | 40.05 | 4 | .13 | 3,068 | 85.58 | 6 | .17 | 3,731 | 97.32 | 6 | .16 |
| Pneumonia | 9 | .28 | 1 | .03 | 13 | .36 | .... | .... | 8 | .21 | 2 | .05 |
| Total respiratory | 165 | 5.16 | 1 | .03 | 166 | 4.63 | .... | .... | 209 | 5.45 | 2 | .05 |
| All diseases | 4,322 | 135.23 | 22 | .69 | 6,986 | 194.87 | 33 | .92 | 7,700 | 200.85 | 30 | .78 |

| Diseases. | July. | | | | August. | | | | September. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 81 | 2.03 | 15 | 0.38 | 78 | 2.01 | 15 | 0.39 | 94 | 2.40 | 13 | 0.33 |
| Malarial infections | 1,602 | 40.20 | 4 | .10 | 2,044 | 52.59 | 1 | .03 | 2,150 | 54.92 | 3 | .08 |
| Undetermined fevers | 87 | 2.18 | .... | .... | 118 | 3.04 | .... | .... | 193 | 4.93 | .... | .... |
| Rheumatic affections | 250 | 6.27 | .... | .... | 287 | 7.38 | .... | .... | 215 | 5.49 | 1 | .03 |
| Consumption | 14 | .35 | 2 | .05 | 22 | .57 | 5 | .13 | 17 | .43 | 5 | .13 |
| All venereal diseases | 301 | 7.55 | .... | .... | 356 | 9.16 | .... | .... | 353 | 9.02 | .... | .... |
| Alcoholism and direct results | 19 | .48 | 1 | .03 | 13 | .33 | 1 | .03 | 34 | .87 | 1 | .03 |
| Diarrheal diseases | 4,282 | 107.44 | 16 | .40 | 3,086 | 79.39 | 15 | .39 | 2,134 | 54.51 | 26 | .66 |
| Pneumonia | 15 | .38 | 1 | .03 | 15 | .39 | 2 | .05 | 11 | .28 | 6 | .15 |
| Total respiratory | 253 | 6.35 | 1 | .03 | 173 | 4.45 | 3 | .33 | 203 | 5.19 | 8 | .20 |
| All diseases | 8,910 | 223.56 | 49 | 1.23 | 8,466 | 217.80 | 59 | 1.52 | 7,981 | 203.87 | 72 | 1.84 |

| Diseases. | October. | | | | November. | | | | December. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 79 | 1.64 | 10 | 0.21 | 78 | 1.42 | 7 | 0.13 | 83 | 1.32 | 17 | 0.27 |
| Malarial infections | 3,345 | 69.44 | 5 | .10 | 4,641 | 84.69 | 6 | .11 | 5,257 | 83.44 | 13 | .21 |
| Undetermined fevers | 176 | 3.65 | .... | .... | 321 | 5.86 | .... | .... | 180 | 2.86 | .... | .... |
| Rheumatic affections | 191 | 3.97 | .... | .... | 226 | 4.12 | 1 | .02 | 225 | 3.57 | .... | .... |
| Consumption | 16 | .33 | 6 | .12 | 16 | .29 | 5 | .09 | 22 | .35 | 2 | .03 |
| All venereal diseases | 407 | 8.45 | .... | .... | 546 | 9.96 | .... | .... | 671 | 10.65 | .... | .... |
| Alcoholism and direct results | 29 | .60 | .... | .... | 32 | .58 | .... | .... | 37 | .59 | 3 | .05 |
| Diarrheal diseases | 2,140 | 44.43 | 31 | .64 | 1,868 | 34.09 | 34 | .62 | 1,819 | 28.89 | 31 | .49 |
| Pneumonia | 19 | .39 | 2 | .04 | 6 | .11 | .... | .... | 20 | .32 | 1 | .02 |
| Total respiratory | 225 | 4.67 | 3 | .06 | 228 | 4.16 | 1 | .02 | 353 | 5.60 | 2 | .03 |
| All diseases | 9,955 | 206.67 | 69 | 1.43 | 10,878 | 198.50 | 70 | 1.28 | 12,030 | 190.96 | 97 | 1.54 |

Medical officers in the Philippines, as elsewhere, have been earnest in their recommendations for the welfare of the men, and commanding officers have usually acted promptly, so far as lay in their power, to carry the recommendations into effect. It has been difficult, however, and, indeed, impracticable to control many of the insanitary conditions, particularly during the progress of the campaign against the insurgents. In many localities the ground was saturated with water, and drainage impossible. Efforts have been made to prevent the troops from frequenting the houses of low-class natives, where infectious diseases are exceedingly common. Special attention has been given to the quarters of the men and to the care of the sinks and earth closets, to the purification of the drinking water, to the supply and preparation of food, the supervision of the laundry work, and the installation of shower baths where there were no other facilities for bathing.

The exposures, fatigues, and excitements of a prolonged campaign are responsible for the large sick report and the relatively large death rate among the troops in the Philippines. The difference is said to have been startling between the sick rate of regiments at the front doing constant outpost duty, subject to night attacks, and having to make periodical advances through difficult country, and that of regiments doing garrison duty at towns in the rear. This difference has been manifested even where the permanent stations have been in insanitary localities. A battalion at Candaba, a badly drained town with insanitary surroundings, had a sick rate of only 8 per cent, while at the same time troops at Angeles, a well-drained town with a sandy soil, gave a rate of 25 per cent. The troops at Candaba had been on ordinary garrison duty for some time, while those at Angeles had fought their way from San Fernando by successive attacks.

Indeed, the opinion is prevalent among our medical officers that in time of peace and doing only garrison duty the sick rate of the Army in the Philippine Islands would be no higher than it ordinarily is in the Southern United States.

The latest reports received from the chief surgeon, Division of the Philippines, dated August 15, 1900, show a percentage of 8.47 sick for the command, which on that date had a strength of 60,554. There were:

| | |
|---|---:|
| Sick in quarters | 1,261 |
| Sick in regimental hospitals | 1,119 |
| Sick in military hospitals in departments | 1,241 |
| Sick in Manila hospitals | 1,508 |
| Total sick | 5,129 |

The general character of the diseases affecting the troops may be gathered from the following statement, consolidated from the reports of the military and Manila hospitals for August 11, 1900, including a total of 2,807 cases:

| Diseases. | Number of cases. | Percentage of total sick. | Diseases. | Number of cases. | Percentage of total sick. |
|---|---:|---:|---|---:|---:|
| Typhoid fever | 56 | 1.99 | Heat exhaustion | 5 | .17 |
| Malarial fever | 605 | 21.55 | Venereal diseases | 271 | 9.65 |
| Dysentery | 403 | 14.35 | Measles | 5 | .17 |
| Diarrhea | 463 | 16.40 | Undetermined | 99 | 3.53 |
| Other intestinal diseases | 50 | 1.74 | All other diseases | 516 | 18.38 |
| Gastric disorders | 96 | 3.42 | | | |
| Wounds and injuries | 238 | 8.47 | Total | 2,807 | 100 |

It has been found that in men suffering from dysentery convalescence is slow and recurrences frequent, and that in the event of such recurrences ultimate recovery becomes exceedingly doubtful while the individuals remain in the tropical climate. Rheumatic affections do not improve and the course of consumption is rapidly progressive, according to the experience of medical officers on duty in the large hospitals in Manila. These cases have, therefore, been sent with advantage to the United States for treatment in the general hospital, Presidio of San Francisco, Cal.; the army and navy general hospital at Hot Springs, Ark., and the general hospital for consumption at Fort Bayard, N. Mex.

There are no doubt locations in the Philippines where such cases could be treated with favorable results, but our medical officers have not yet had a sufficient experience of the sanitary conditions and prevailing diseases of the different sections of the islands to enable them to make recommendations as to the selection of sites for convalescent hospitals in which such cases as are now sent to the United States might rest and recuperate.

*Field service of the troops.*—In my last annual report I described the broken-down condition of General MacArthur's division on its arrival at San Fernando, in May, 1899, after an exhausting campaign which had lasted continuously since the insurgent outbreak on February 4 of that year. During the following autumn military operations were conducted on a relatively large scale, the regiments being brigaded and organized into two divisions. Campaigns were carried on in Cavite Province, in the Valley of the Rio Grande de Pampango and beyond, and many excursions were made into hostile territory. In Negros and Cebu exhausting marches were made in mountain districts, and in Panay there was a sharp campaign. In the late autumn the northern part of Luzon was occupied. All these movements were associated with great fatigues and hardships.

First aid during this field service was usually limited to the hand litters and the possibilities of the first-aid packets and Hospital Corps and orderly pouches, but as the number of wounded in any one engagement was generally small as compared with the number of troops engaged and the consequent number of medical officers and Hospital Corps men available, every care was given to the individual cases. It may be here stated that a profound impression was made on the more intelligent class of Filipinos by the kindness of our soldiers to their wounded. Several medical officers have commented upon this. Filipino prisoners observed that their wounded, when in our hands, were dressed and cared for as if they belonged to our own Army, and this even when we had to leave them behind on account of the military necessity.

An ambulance company was attached to each division, but the ground was often of such a character as to render wheeled vehicles useless, and many of the wounded had to be carried long distances by hand. In the mountain country of what is now the Second district of the Department of Northern Luzon, where the trails are too rough and the turns too abrupt for the use of any kind of travois, the wounded had to be brought out into the foothills by hand litter. The labor of carrying a loaded litter speedily exhausted our men, so that recourse was had to Chinese litter bearers. These men, accustomed to carrying heavy burdens on their shoulder, proved exceedingly valuable under the supervision of the Hospital Corps. They were reported as being patient, tireless, and brave.

Light field hospitals or dressing stations accompanied the advance of the troops, and the wounded were sent back by ambulance or rail to the brigade hospitals or to the large hospitals in Manila. As the second division progressed northward during its campaign the line of rail was repaired. Cars were subsequently fitted up for hospital purposes, and now a daily hospital-train service has been established.

Favorable reports of the ability and zeal of the Hospital Corps on active service in the Philippines have been received from the medical officers on duty with the expeditionary columns. The sick and wounded have been intelligently, faithfully, and well cared for.

Even as late as January and February, 1900, an active campaign was carried on in southern Luzon. An expeditionary force of six regiments of infantry and two of cavalry was mobilized and divided into an advance column under Brigadier-General Schwan, and a marching column under Brigadier-General Wheaton. The brigade surgeon of the one was Maj. H. S. T. Harris, surgeon, United States Volunteers, of the other Maj. H. P. Birmingham, surgeon, United States Army. Another expedition was sent out later under Maj. Gen. James M. Bell for the suppression of insurrectionary movements in the Camarines. Maj. Thomas U. Raymond, surgeon, Fortieth Infantry Volunteers, was brigade surgeon of this command. The difficulties of caring for sick and wounded men on such campaigns may be gathered from the following reports:

REPORT OF MAJ. H. S. T. HARRIS, BRIGADE SURGEON, UNITED STATES VOLUNTEERS, CHIEF SURGEON SECOND DIVISION, EIGHTH ARMY CORPS, BAUTISTA, P. I., DECEMBER 31, 1899.

I have the honor to submit the following report covering the period of my service in charge of this office:

When I reported for duty the headquarters were at San Fernando, and the front of the division occupied the following points, viz: Ninth and Thirty-sixth Infantry on the line from Bacalor to Guagua and the Twelfth and Seventeenth Infantry at Calulut and Sindalan. The sick were brought in from the Bacalor line by ambulances and from Calulut by railway transportation.

The ambulances were found to be insufficient in number and worn out from long and hard use. Constant effort has been made to obtain new vehicles and increase the train. My recommendations in this respect have been carried out as far as it was in the power of the Quartermaster's Department to do it.

The division field hospital, at that time at San Fernando, was taken charge of by First Lieut. P. C. Fauntleroy, assistant surgeon, United States Army, on August 20, 1899, and by his efforts has been kept in most excellent condition, and has met the heavy demands upon it in a most creditable manner.

The headquarters accompanied the advance to Angeles by way of Porac, September 28, 1899. The men wounded in taking Porac, 6 in number, were attended surgically by Maj. P. F. Straub, surgeon, Thirty-sixth United States Volunteer Infantry, and First Lieut. E. W. Pinkham, assistant surgeon, United States Army, surgeon Ninth United States Infantry, and were carried into Angeles with the column, after a night's rest at Porac, without any untoward results.

The division field hospital was moved to Angeles in the first days of October, and very advantageously located in the cathedral at that place, where it now is.

In the advance of Major O'Brien's battalion of the Seventeenth United States Infantry from Calulut to Magallang, November 7, 1899, provision was made for carriage by native bearers of the wounded along with the command, as the condition of the roads precluded the use of ambulances. Opportunity was found, however, to send in the 2 men seriously wounded at Angeles by bull-cart transportation. Acting Asst. Surg. R. A. Edmonston, United States Army, assistant surgeon Seventeenth United States Infantry, was slightly wounded while performing his duties under fire on this march. Hospital Steward George D. Douglass, Hospital Corps, United States Army, was seriously wounded while accompanying the other two battalions of the regiment from Angeles to Magallang on the same movement.

In the advance from Angeles to this place (Bautista), commencing November 9, 1899, the problem presented to the medical department has been quite difficult, owing to the fact that the final movement had to be organized from Mabalacat, 6 miles distant from the base, on short notice, and that the roads from Bamban on proved almost impassable. With the hearty cooperation of the medical-supply depot, the regimental surgeons, and the division quartermaster and commissary officers the task was accomplished without any more than the usual unavoidale amount of discomfort and privation to sick and wounded in the field. The number of wounded was fortunately in no measure what had been anticipated and provided for.

A temporary field hospital was established at Mabalacat for the reception of the wounded during the attack on Bamban November 11, 1899, and was moved to the latter place the next day, but owing to the condition of the roads it was left there temporarily. The sick of the regiments were satisfactorily cared for by their own medical officers at Capas and Murcia; but at Tarlac the personnel and supplies were brought up by rail and the hospital established in the church, under the very efficient charge of Acting Asst. Surg. J. S. White, United States Army. In order to entitle this hospital to the benefits of General Orders 137, Adjutant-General's Office, current series, it was, at my request, designated in orders from headquarters First Brigade, Second Division, Eighth Corps, as the First Brigade field hospital, although at that time taking care of the sick of all regiments at the front.

In the advance of the Thirty-sixth Infantry and O'Brien's battalion of the Seventeenth Infantry up the railroad medical supplies were carried by native bearers, as no transportation accompanied the command.

Since the establishment of permanent garrisons on this side of the Tarlac washout the sick have been cared for in the regimental hospitals of the Twelfth and Seventeenth Infantry, at Panique and Bautista, respectively. The Thirty-sixth Infantry has a hospital at Mangataren, but has been directed to send its more serious cases to the hospital of the Seventeenth Infantry, at Bautista. It is proposed to put on a well-equipped hospital car from Dagupan to Angeles and then to abandon the First Brigade field hospital at Tarlac and to cut down these regimental hospitals and have the sick cared for in the division field hospital.

The work of all the medical officers in the division has been so well done that it seems unfair to praise any by name. The Thirty-sixth Infantry, however, has been most active, and its surgeon, Maj. P. F. Straub, has had greater opportunity for exhibiting an intimate knowledge of the field requirements of a regiment and for independent executive work. Of these opportunities he appears to have made the best use possible. Both he and Capt. George W. Mathews, assistant surgeon, Thirty-sixth Infantry, have acquitted themselves gallantly on the many occasions they have been under fire. Capt. C. E. B. Flagg, assistant surgeon, United States Army, surgeon Seventeenth United States Infantry, accompanied the Seventeenth Infantry from Angeles to Magallang, Concepcion, and Capas, dressing the wounded in the many fights "right where they fell," to quote a line officer of the regiment, and doing good aseptic operation work under the most discouraging conditions. First Lieut. E. W. Pinkham, assistant surgeon, United States Army, surgeon Ninth Infantry, was with the firing line of the Ninth Infantry when Porac was taken, on September 28, 1899, and First Lieut. Clyde S. Ford, assistant surgeon, United States Army, at that time surgeon Twelfth Infantry, was at the front with the Twelfth Infantry in the capture of Angeles, on August 16, 1899.

The sick rate from all causes save malaria has remained practically stationary since August, 1899, but the number of cases suffering from that disease has trebled during November and December, with a steady increase during October. The type of malaria is not very pernicious, but tends to recur. No typhoid fever was noted at Angeles, but a few cases have recently occurred in three different regiments, showing, probably, a common source of infection encountered at some halting place on the recent advance.

The difference has been startling between the sick rate of regiments at the front doing constant outpost duty, subject to night attacks, and having to make periodical advances through difficult country, and that of regiments doing garrison duty at towns farther to the rear. This difference has been manifested even where the permanent stations have been in unsanitary locations. The post surgeon reports Candaba as badly drained and with bad surroundings, but the battalion there gave a sick rate of only 8 per cent, while the troops at Angeles, a comparatively well-drained town, with a sandy soil, gave a rate that was never less than 25 per cent. The troops at Candaba had been on ordinary garrison duty for some time, and those at Angeles had fought their way from San Fernando by successive attacks.

The sanitary regulations have been quite faithfully carried out by the troops. Great attention has been given to the boiling of the drinking water, but I do not believe that the men, even in established camps, can be made to avoid unboiled water entirely, and upon the march the enforcement of this order is impracticable. Authority was given the medical department to purchase quicklime for use in the sinks, but no lime can be found in this climate which is not air-slacked. Great as would be the expense, I should recommend that whenever practicable a sufficient quantity of chloride of lime be furnished to disinfect every sink at least once a day.

It is not in my province to either criticise or commend the administration of the medical department in these islands, but I wish to preface a recommendation with the statement that the organization, equipment, etc., are probably as nearly perfect as they can be made under the conditions which prevail. In my opinion each regiment should have four medical officers, one for each battalion, and a regimental surgeon, and the battalion organization should be further recognized by issuing three smaller sets of medical and surgical chests, each to be complete in essentials in itself, in addition to the large set now furnished for the regiment. I find that in the regiments the surgeons have been assigned to battalions and take sick call and care for them separately, and that this arrangement, for many reasons, works satisfactorily. A regimental surgeon is needed for purposes of general supervision and administration. The battalion in the new regimental formation is almost as much a unit as the regiment formerly was, and almost as large.

I recommended in a former report that a light spring wagon with two mules be assigned to each regimental medical department, and that six of these wagons be attached to the division ambulance train, to be used in carrying the medical and surgical equipment, so that it may always be ahead of the rest of the transportation and available. The recommendation was not carried out on account of the scarcity of mules, but should be put into effect as soon as possible, I believe, in cases where regiments are likely to have active service in a country where wheeled transportation can be used.

### Report of Maj. H. S. T. Harris, Surgeon, United States Volunteers, Chief Surgeon of General Schwan's Expeditionary Brigade in Southern Luzon.

The expedition was formed at San Pedro Macati in the early days of January. An ambulance train of seven vehicles with four mules each and civilian drivers was procured from the Quartermaster's Department. Fourteen Hospital Corps men and an acting steward were assigned to the train by the chief surgeon of the corps. As no transportation could be procured for extra drugs and dressings, one ambulance was loaded with a box of the essential drugs, anæsthetics, dressings, set of medical and surgical chests, and sterilizer; also some special food supplies for invalids.

The expedition consisted of the Thirtieth and Forty-sixth Infantry, nine troops of cavalry, battalion of Macabebe scouts, and several pieces of artillery. The command left San Pedro Macati January 4 and 5, camping in Muntinlupa the night of the 5th.

In taking Binan on the morning of the 6th 4 men were wounded. A field hospital was opened in the town and permanent dressings supplied by Surgeons McDill and Erwin, of the Thirtieth Infantry. On the same night the wounded were sent to Manila on the gunboat *Napindan*. Leaving a battalion of the Forty-sixth Infantry at Binan, the command marched southwest the next day to Silang, which place they occupied that night, the cavalry pushing on to Indang and Naic. They sustained a loss of 2 killed and 2 wounded in taking the towns of Indang, Silang, and Naic. The wounded were afterwards brought by boat from Naic to Manila.

The towns before mentioned having been garrisoned by the Forty-sixth Infantry, the remainder of the expedition started out again from Silang, January 13. The ambulances and wagon train proceeded by Binan and Calamba to Santo Tomas, the troops over mountain trails to Talosay, on the shore of Lake Taal, and thence to Santo Tomas.

The Thirty-eighth and Thirty-ninth Infantry joined the command at Lipa January 15. Four medical and surgical chests for detached service, which had been telegraphed for, were received from Calamba at this point and distributed among the battalions of the Thirty-eighth and Thirty-ninth Infantry. A battalion of the Thirty-ninth having been left at Santo Tomas and one at Lipa, with a small hospital at each place, the remainder of the command occupied Batangas without a casualty on January 16. Fresh supplies were here received from the hospital ship *Relief*.

Leaving a battalion of the Thirty-eighth Infantry to garrison Batangas and one to occupy Rosario, the command proceeded to San Pablo. Outside the latter place, at a point called San Diego, on the afternoon of January 20 the enemy was found intrenched and quite a hot little fight occurred, our loss being 8 wounded and 1 killed. Permanent dressings were applied to the wounded that night at the barrio of Pooc by Captain Erwin, assistant surgeon Thirtieth Infantry, and the writer. The wounded were carried forward with the command next morning.

At Lilio, at noon on January 21, information was received that the enemy was in force at the mountain town of Mayjayjay. The command marched upon this place, leaving orders for the wagon train and wounded to proceed to Santa Cruz. On the 22d the enemy evacuated Mayjayjay without waiting for our attack, and the command proceeded to Santa Cruz, leaving a garrison at Mayjayjay.

The wounded from the fight at San Diego were found at Santa Cruz under charge of Maj. F. A. Winter, surgeon, Thirty-seventh Infantry, and apparently in very good condition. They were shipped to Manila by the gunboat *Oeste* next day. I have since learned that two of the slightly wounded, a week or two after they had received their wounds, showed symptoms of infection from the bacillus ærogenes capsulatus and died. Such infection, I hear, is not uncommon in these islands.

The expedition was completed by a tour made by the commanding general and his staff through the provinces of Laguan and Tayabas, leaving Santa Cruz the 3d of February and returning the 7th.

The work of the Medical Department under the circumstances of the campaign was, I consider, satisfactory. The Thirtieth and Forty-sixth Infantry had been inspected previous to starting and their deficiencies supplied. The Thirty-eighth and Thirty-ninth, however, appeared to have started out rather unprepared and were wanting in both medical officers, hospital-corps men, and equipment.

The medical and surgical chest for detached service was found of the utmost value—small, compact, and complete for its purpose. It was found feasible to carry it with the command by Chinese bearers, and as the column practically never had its wagon transportation with it this proved a matter of the greatest importance. The sick and wounded of the command had to be left at each town which we garrisoned, it being both impossible and inadvisable to carry them farther with the column than was absolutely necessary. This scheme worked fairly well practically, and is about the only one which can be put into effect in such campaigns. The classical plan of a first-aid station on the field with ambulance station, brigade hospital, etc., does not apply to the small running fights of such warfare. The wounded must be dressed where they fall and the permanent dressings applied in the town attacked after it has been taken. All the officers of the medical department of the brigade gave most cordial cooperation and assistance on all occasions. Lieut. E. D. Sinks, assistant surgeon, Thirty-seventh Infantry, is particularly to be commended for gallantry in dressing the wounded under fire at San Diego. The ambulances taken from Manila and the hospital-corps men with them were distributed among the different stations garrisoned by the command as needed. All applications for supplies made upon the chief surgeon of the division were filled with the utmost promptitude. Eight men were killed and 27 wounded during the expedition.

## ESTABLISHMENT OF GARRISONS.

The primary object of these campaigns and expeditions was to break up and disperse all organized resistance to the authority of the United States. When this was accomplished it was followed by the necessity of occupying all strategic points on the coast and in the interior to protect life and property during the unsettled condition of the country consequent on the dispersion of the insurrectos. The troops, instead of being massed by brigades, became scattered as garrisons in towns and villages. Even the companies of a battalion were not always stationed at the same post. This change in the character of the service required of the troops had an important bearing on the medical administration. The number of medical officers which had sufficed for field service when the troops were massed was wholly inadequate to furnish post surgeons to every post under the new and suddenly developed conditions. A scarcity of medical officers was specially marked in the case of the troops occupying the Camarines. Although the personnel of the medical and hospital corps assigned to duty with this brigade was considered by the chief surgeon to be sufficient to meet the exigencies of service, the splitting up of the brigade into a large number of small commands for the occupation of the country rendered it impossible for him to assign a medical officer to each of these detachments. (See report on page 661.) In another instance seven medical officers were assigned to duty with one regiment, yet some of the stations garrisoned by this regiment had to be left without a resident surgeon. As it was impossible to obtain a medical officer for every station, it became necessary to place selected men of the hospital corps at subposts and with small detachments to care for slight cases and call upon the surgeon of the nearest garrison when his assistance was required. In several instances a medical officer has been responsible for the care of three or four subposts or detachments, 5 to 15 miles apart, when, owing to the hostile condition of the country, an escort was necessary for his protection in making his visits to them. Similar conditions have frequently existed in our own Western Territories, or so-called Indian country, prior to the extension of railroads over them and their subsequent settlement and cultivation. To relieve the stress of this situation medical officers and acting assistant surgeons were sent out by every transport which sailed from the United States for Manila. On December 31, 1899, there were 257 medical officers in the Division of the Philippines. This number was considered sufficient by General Otis. On January 11, 1900, Colonel Greenleaf, chief surgeon, estimated the number of medical officers required at 360. His report of April 30 records the presence of 356 in his division, and his report of May 31, 364. From January 1 to June 30, 1900, 126 medical officers were sent to the Philippines.

This subject is explained in full in the following communication:

AUGUST 15, 1900.

SIR: Referring to recent cablegrams from Manila calling for 100 more medical officers for service in the Philippines, I have the honor to invite your attention to the following facts:

The return of Colonel Greenleaf, chief surgeon at Manila, for December 31, 1899, shows that the number of medical officers in the Philippines upon that date was: Regulars, 45; volunteer staff, 22; regimental, 63; contract surgeons, 127—a total of 257, or something over 4 per thousand of strength of the command, estimated at 60,000. Since that date the number of troops has not been increased, and a recent report shows that the health conditions have been quite favorable. The total number of sick during the first five months of the year 1900 has not at any time exceeded 9.65 per cent of the command, and has averaged 8.08 per cent. Colonel Greenleaf's predecessor (Colonel Woodhull) anticipated a much larger sick rate and represented the necessity of additional medical officers in view of the greatly increased amount of sickness which he anticipated. General Otis, however, as I am informed, did not consider more medical officers necessary at that time. He, however, at a later date, March 28, 1900, asked for 30 medical officers, "this because of numerous new stations established."

In a letter from Colonel Greenleaf dated January 11, 1900, he says:

"A similar difficulty presents itself in the matter of medical officers, of whom there is also an insufficient number for the current wants of the service. At least 75 more are required to complete the number necessary, in my opinion, for the medical service of the troops now in the islands, viz, three-fifths of 1 per cent of the aggregate force. There are now 285 medical officers here; there should be 360, estimating the present force at 60,000 men."

This letter was not received at my office until February 12. From February 1 to April 30, 77 medical officers were sent to the Philippines in compliance with this demand, and on April 30 Colonel Greenleaf's report showed the total number of medical officers in the Philippines to be within four of the number fixed in his letter of January 11, above referred to, viz: Regimental surgeons, 72; United States volunteers, 26; regulars, 47; contract surgeons, 211; total, 356.

On February 5 I cabled to Colonel Greenleaf as follows: "Ordered to Philippines since December 1: Commissioned, 8; contract, 28. Of these 22 have sailed." The following day he cabled to me: "In great need of 40 more." At this time his letter of January 11 had not been received, and it is evident that his cable of the 6th, following mine of the 5th, was a request for 40 more in addition to those who had already been ordered. During the months of February and March 44 were sent.

On March 12 Colonel Greenleaf cabled: "How many medical officers?" and I replied: "Sailed since February 1, 9; awaiting transportation, 30; contracts will be made with 20." On March 28 General Otis cabled, as above stated: "Still needed, 30 medical officers; this because of numerous new stations established." During the month of April this requisition was filled, 33 medical officers having been ordered during that month to the Philippines.

In a letter dated February 10 Colonel Greenleaf says: "I think you ought to know the exact truth of affairs here, and for this reason have written as plainly as possible, and also that you may thoroughly understand my reasons for asking for 40 more medical officers. Now that organized resistance on the part of the insurgents has practically ceased and military operations are confined largely to hunting down brigands, the desire for service in the Army is fading out, and it will not belong before many of the contract doctors now here will give up their contracts and ask to return to the United States. I think it would be wise to have a reserve force of from 25 to 50 medical men distributed throughout the islands who could be called upon to fill vacancies that will occur in the future through these causes."

This letter of February 10 is evidently in explanation of his cablegram of February 6, and simply confirms the request for 40 more, with the suggestion that it would be well to have from 25 to 50 in addition as a reserve force. At this time we had in service the full number of medical officers authorized by law, the act making appropriations for the support of the Army for the fiscal year ending June 30, 1900, having appropriated for 400 contract surgeons only; but in view of Colonel Greenleaf's statement in his letter of January 11, 1900, I requested the military committees of both Houses to make appropriation for the fiscal year ending June 30, 1901, for 480 contract surgeons. The appropriation was made, but with the limiting clause, "Not to exceed 480." Therefore, up to June 30, 1900, the limit fixed by law was 400 and after that date 480, a number which I supposed at the time the estimates were made would be ample, a supposition which was justified by Colonel Greenleaf's estimate above referred to; that is, for the Philippines a total of 360 medical officers.

In a letter dated March 15 and received at this office April 19 Colonel Greenleaf says:

"Since my last letter to you about twenty new posts have been established, some of them on the seacoast and some in the interior. Many of them are yet without medical officers, and I was very much gratified to receive your cable message announcing that I might count upon 59 doctors within the next two months."

In a letter dated May 15 Colonel Greenleaf says:

"I desire to add that there should be kept up a constant stream of medical officers to this division to take the places of those returning. There is already a list of 22 acting assistant surgeons who have applied for annulment of contract, but the general conditions have been such that I have been compelled to hold them as a military necessity. This has created much dissatisfaction, and, as you will observe in a letter going by this mail, one of them has deserted. There should be from 5 to 10 medical officers sent out on every steamer leaving the United States until our medical needs are fully met, at which time I can easily cable you and the supply can cease."

This constant stream of from 5 to 10 medical officers it has been my aim to maintain. Sixteen contract surgeons were ordered to the Philippines during the month of May and 19 during the month of June. In all, 126 medical officers were ordered during the six months ending June 30, and I had reason to believe upon this date that I had met as promptly as was practicable the demands for medical officers which had been made by the general commanding the Division of the Philippines and by his chief surgeon. But, upon July 14, during my absence from the city on an inspecting trip, a cablegram was received from Colonel Greenleaf as follows:

"Need 100 medical officers, 300 Hospital Corps, Philippine Islands."

In a letter from Colonel Greenleaf dated June 7 he says: "There is a deficit of 120 medical officers in the Philippines, but I think 75 men could be made to supply the present deficit of 120, and thereafter regular detachments of 10 each month should be sent here, to meet the pending resignations and casualties, as heretofore recommended." This letter was received at my office July 19, during my absence on an inspecting trip. Colonel Greenleaf's cablegram of July 14 was forwarded to me at San Francisco, and I immediately instructed the Acting Surgeon-General to make contracts at once with 10 physicians who, having passed a satisfactory examination, were available, and to order the immediate examination of all desirable applicants. Upon my return to Washington, July 23, I immediately brought the matter to the attention of the honorable the Secretary of War and represented to him that it was impossible to supply the demand for medical officers in the Philippines and in China without exceeding the limit of 480 contract surgeons fixed by the act making appropriations for the fiscal year ending June 30, 1901. On July 27 I received the following order from the Secretary of War, and immediately announced through the public press that 100 more contract surgeons were wanted:

WAR DEPARTMENT, ADJUTANT-GENERAL'S OFFICE,
*Washington, July 27, 1900.*

The SURGEON-GENERAL UNITED STATES ARMY.

SIR: Referring to your letter of the 26th instant regarding the representation of Colonel Greenleaf, chief surgeon of the Division of the Philippines, that more medical officers are greatly needed in that division, and to your expressed opinion that to meet the requirements in Manila and in China it will be necessary to employ under contract more than 100 additional physicians, etc., the Secretary of War directs that as many medical officers of the Medical Department as can be spared to meet the requirements of General MacArthur in the Philippines be sent there, and authorizes the employment of a sufficient number of contract surgeons to make up such deficiency in the number required to meet the present emergency, after such medical officers of the Army and contract surgeons now in service as can be spared from other points are ordered on this duty.

Very respectfully, H. C. CORBIN, *Adjutant-General.*

More than 1,500 applications were received, and from among those who first applied I selected more than 150 who were authorized to present themselves to medical boards for examination as to their physical and professional qualifications for foreign service.

GEO. M. STERNBERG, *Surgeon-General.*

The SECRETARY OF WAR.

Those who passed a successful examination were at once ordered to San Francisco to be sent by the first available transport to the Philippines or to China. Eighteen sailed in the month of July, 83 in the month of August, and 41 in the month of September. In addition to this, 16 commissioned medical officers have been sent since July 1. In compliance with recent orders all of the medical officers who accompanied troops to China will go to the Philippines, except such as are required for duty with the legation guard of 1,500 men.

Most of the towns or pueblos occupied by our troops had roomy convents or churches, which were used as quarters for the commands, the friars having left the country during the insurrection. Private residences also were utilized as barracks, and, as a rule, the troops were well and comfortably housed.

Hospitals were immediately organized in these garrisoned towns—well-equipped establishments in those which were the headquarters of regiments, post hospitals in those having smaller garrisons, and dispensaries at places occupied by subposts or detachments. In addition to these local hospitals, base hospitals were organized at points on the seacoast or on rivers which had the best communication with interior stations. Thus, in the Department of Southern Luzon base hospitals were established at Calamba and Santa Cruz on the Laguna, and at Bacoor, Batangas, and Lucena on the seacoast. So in the other departments. Light cases remained in quarters at the subposts and minor garrisons; cases of greater gravity were transferred to the regimental hospitals; chronic cases were sent for treatment to the base hospitals, and these establishments when overcrowded were relieved by sending selected cases by the railroad, or from seacoast stations by the hospital ship *Relief*, to the larger hospitals in Manila. Colonel Greenleaf, chief surgeon, on February 10, 1900, gave the following tabulation of the hospital accommodation in the Division of the Philippines:

| | | |
|---|---|---|
| Manila: | | |
| First reserve | 791 | |
| Second reserve | 323 | |
| Hospital No. 3 | 263 | |
| Santa Mesa | 600 | |
| Convalescent, Corregidor Island | 220 | |
| | | 2,197 |
| Hospital ships: | | |
| Relief | 234 | |
| Missouri | 300 | |
| | | 534 |
| First division: | | |
| Base hospital, Calamba | 100 | |
| Second Brigade, Bacoor | 120 | |

| | | |
|---|---|---|
| First division—Continued. | | |
| Field hospital, Santa Cruz | 60 | |
| Field hospital, Naic, Cavite | 40 | |
| Tayabas | 30 | |
| Santo Tomas | 50 | |
| Batangas | 50 | |
| | | 450 |
| Second Division: | | |
| Field hospital, Angeles | 180 | |
| Base hospital, Dagupan | 350 | |
| Branch brigade hospital, Cabanatuan | 60 | |
| Field hospital, San Miguel de Mayumo | 30 | |
| | | 620 |
| Visayan military district: | | |
| Brigade hospital, Iloilo | 300 | |
| Post hospital, Cebu | 150 | |
| | | 450 |
| District northwestern Luzon: | | |
| Brigade hospital, Vigan | 60 | |
| Bangar | 25 | |
| Candon | 25 | |
| Narbacan | 10 | |
| Laoag | 30 | |
| San Fernando | 30 | |
| | | 180 |
| District Mindanao and Jolo: | | |
| Zamboango | 30 | |
| Jolo | 30 | |
| | | 60 |
| Aparri | | 50 |
| Regimental hospitals | | 750 |
| Total | | 5,291 |

The establishment of post and regimental hospitals was of great benefit in relieving the base hospitals and those in Manila, for prior to this time all men taken on sick report had been sent away from their commands to these hospitals. Men who might have been returned to duty after a rest of a few days with special diet were sent to district hospitals, where their retention for want of facilities for their return to their command in many instances increased the numerical percentage of sick.

The distance of some of the posts from lines of transportation and the difficulties presented by mountain roads occasioned for a time a scarcity not only of medical supplies but even a shortage of rations. According to the chief surgeon all posts in Nueva Viscaya were temporarily on short rations. Fresh beef and potatoes were scarce and seldom issued up to April 20, 1900.

Many of the interior garrisons are cut off from communication with their base by the impassability of the roads during the rainy season. Care, however, has been taken to provide them in time with a full six months' supply of medicines and medical and hospital stores.

## MUNICIPAL SANITATION.

The sanitary condition of the garrisoned towns and villages is described as having been execrable. Filth of all kinds underlay and surrounded the houses, and the hogs were the only scavengers. For the protection of their commands in such localities post commanders were required to consult with the local authorities with a view to remedy these conditions, and a great reformation in this respect was speedily effected. There appears no doubt that the sanitary condition of the garrisoned towns has been greatly improved since the advent of the American troops. In Manila the board of health, consisting of army medical officers, has done excellent work during the past year under the presidency of Maj. Guy L. Edie, surgeon, United States Volunteers, whose report is submitted below, page 723. To suppress the spread of smallpox among the native population vaccine matter, prepared under the supervision of this board, was sent to medical officers in the various military districts, and arrangements were made for a systematic vaccination of the people. See the report of Chief Surgeon Maus, Department of Northern Luzon (infra page 633).

The following letter from Col. Charles R. Greenleaf, assistant surgeon-general, United States Army, chief surgeon Division of the Philippines, in relation to the sanitation of Manila and other large cities in the islands, was addressed to the adjutant-general of the division May 21, 1900:

I have the honor to submit herewith memorandum recommendations on municipal sanitation, for the present application to the city of Manila and to other large cities in the archipelago. It is proper to remark that maritime sanitation, including quarantine, is in the hands of the Marine-Hospital Service, which has its representatives on duty in Manila now engaged in equipping a plant at the quarantine station at Marivales.

*Municipal sanitation.*—This is now, and has been since the occupation of Manila by our troops, in the hands of a board of health, consisting of army medical officers. This board has done, under most trying circumstances, excellent and efficient service, so far as it has been able with the limited means at its disposal, but it has been hampered by lack of funds, and, owing to the unsettled condition of civil affairs, by the absence of a municipal administrative force that is essential to complete success; nor has it received the encouraging assistance from the late general commanding which the importance of the subject in its bearing on the troops demanded. It has made great progress in cleaning the streets of the city, in removing filth that has been accumulating for years, and in regulating, to a certain extent, the purity of the food supply; it has practically stamped out smallpox by forcible vaccination and revaccination, where that was necessary, and has held in check the progress of bubonic plague, that, after lodgment in other tropical cities, has speedily become epidemic and caused a frightful mortality; but its work has of necessity been superficial, and the good results can only be maintained by a constant vigilance, by a vigorous support from the military authorities, and by a liberal supply of funds. The Spanish laws on sanitation are in most instances well drawn, but they have not been properly executed, and the American additions, while equally good in theory, have been almost as faulty in execution. This is practically the case in overcrowding of habitations, due to the rapacity of the house owners, who, in their eagerness for gain, disregard all law, and fill their tenements to the utmost capacity of the rooms. It is to secure these important aids that the inclosed memorandum is submitted. The work to be done is an immediate and pressing necessity, but should not obscure the greater necessity for a permanent sanitary organization. So soon as municipal government is organized there should be appointed a capable sanitary engineer, a superintendent of public buildings and works, and a board of health, to decide upon and formulate methods for disposing of excreta, garbage, street waste, etc., whether by water carriage (sewerage), cremation, sea dumping, or otherwise; for securing a pure food supply, including inspection of meats, vegetables, fruits, etc.; the construction and care of markets; for improving the water supply, increasing its quantity, and insuring its purity; for cleaning the "esteros," constructing tide gates, and walling their banks with masonry or concrete, so that they will not only carry off the surface drainage, but will serve as highways for commerce through various parts of the city; and for the adoption of general health regulations, such as are now in force in any larger American cities.

1. A strict enforcement of existing rules, both municipal and military, regarding cleanliness about habitations, the emptying of privy vaults, dry-earth closets, and cesspools, and the flushing of drains and sewers. In the nipa house districts, an insistence upon the use of dry-earth closets by the occupants; in the markets, cleanliness to be enforced and no person to be permitted to live in them, and for this purpose that a market inspector be appointed for each market, who shall be present from

its opening to its close, and make prompt report to the board of health of any disobedience of the rules.

2. A strict compliance with existing laws, and such alterations therein as in the judgment of the board of health will best conserve the public health.

3. The prevention of overcrowding in habitations, by the promulgation of an ordinance making every house owner amenable to a fine or imprisonment, or both, if more persons than specified according to surface (18 square feet) and cubic air space (not less than 300 cubic feet) are permitted to live in their houses.

4. The removal, where practicable, of persons from premises that are now overcrowded.

5. To give effect to these matters, the appointment of a building superintendent to act as special inspector over that subject; the enforcement of a strict compliance with the rules governing the issuance of licenses to build and occupy habitations, and if necessary an increase in the number of sanitary inspectors to insure efficiency in house, lot, and street cleaning, and the removal of garbage and ashes. When house owners fail after due notice to clean their premises, the board of health to have it done, charging the cost against the owner.

6. For the removal of night soil, a sufficient number of large scows to be provided that can be towed into the bay and emptied at a place not nearer the city than Cavite Point, and as much farther from there as will insure the deposit from being returned by ocean currents to the vicinity of the city; street sweepings, garbage, and under certain conditions portions of night soil, to be cremated as at present, and when approved by the board of health, disposed of to surrounding farms.

7. During the wet season, the moat around the walled city and all "esteros" in the city limits to be dredged and thoroughly cleaned.

8. For the prevention and care of infectious diseases: (*a*) A continuance of the present system of house-to-house inspection, the segregation of suspects or developed cases, the quarantine of the house and its inmates during the incubation period of the disease, the thorough cleansing and disinfection of the premises and the occupants' effects, and the destruction, so far as practicable, of vermin. (*b*) The construction of a temporary (nipa) infectious-disease hospital, to take the place in site and bed capacity of the present tent hospital, which, during the rainy season, will be unsuited to its purpose.

9. The promulgation of an ordinance requiring compulsory vaccination of all unprotected inhabitants, and that after the opening of the schools no one shall be admitted as a pupil except on presentation of a certificate of recent vaccination or revaccination.

10. That the interpretation and enforcement of laws governing municipal sanitation be under direction of the board of health.

A communication on the subject of leprosy was addressed to the military governor by the chief surgeon June 4, 1900, in which he represented the number of lepers in the archipelago to be about 30,000, and urged the advisability of taking immediate steps to protect the healthy population from future infection. He submitted a "projet" for the segregation and care of lepers in the islands. The plan, which was drawn up with the assistance of Major Edie, president of the board of health, and Maj. L. M. Maus, surgeon, United States Army, both of whom had given much study to the subject, was as follows:

As a large number of the people in these islands are the subjects of leprosy, and their presence has become a menace to the safety of the healthy population, it is recommended:

1. That there be set apart any land or portion of land now owned by the government for a site or sites of an establishment or establishments to secure the isolation and seclusion of such leprous persons as in the opinion of the board of health or its agents may, by being at large, cause the spread of the disease, and that the government acquire for this purpose, by purchase, exchange, or condemnation, any pieces or parcels of land which may seem better adapted to the use of lepers than any land owned by the government.

2. That a board of public health for the archipelago be organized without delay, with full authority to deal with all questions affecting the public health and sanitation of the islands, and to appoint the necessary agents to carry out its work.

3. That a board of officers, consisting of one medical officer, one quartermaster, and one judge-advocate, be detailed to select one or more suitable islands, and to prepare plans and estimates for buildings, submit an estimate of salaries for the necessary offi-

cials, etc., and fix the rations and other allowances necessary for the support of the lepers and the colony. A list of the islands that is thought to be suitable for the purpose is herewith submitted.

4. That the board of health or its agents be authorized and empowered to cause to be isolated and confined on the island selected, all leprous persons who shall be deemed capable of spreading the disease; and it shall be the duty of every police and district authority, when properly applied to for that purpose by the board of health, or its authorized agents, to cause to be arrested and delivered to the board of health, or its agents, any person alleged to be a leper within the jurisdiction of such police or district authority; and it shall be the duty of police officers and others of like authority to assist in securing the conveyance of any person so arrested to such place as the board of health or its agents may direct, in order that such persons may be subjected to medical inspection; and thereafter to assist in removing such persons to the place of isolation, if so required by the agents of the board of health, and that the following memorandum regulations to facilitate the segregation of lepers be adopted.

5. Whoever shall knowingly detain or harbor on premises subject to his control, or shall in any manner conceal or assist in concealing, any persons afflicted with leprosy, with the intent that such person be not discovered by or delivered to the board of health or its agents, or who shall support or assist in supporting any person having leprosy living in concealment, shall be deemed guilty of a misdemeanor, and shall, upon lawful conviction thereof before any court, be liable to a fine of not more than $100.

6. It shall be the duty of every officer or deputy having reason to believe that any person within his district is afflicted with leprosy to report the same forthwith to the agents of the board of health within such district, if any; otherwise to the nearest agent of the board. Any police officer who shall wilfully fail to comply with this provision shall be deemed guilty of a misdemeanor, and, upon conviction thereof before any police or district court, shall be fined in a sum not less than ——— nor more than ——— dollars, and shall be dismissed from office.

7. The board of health is authorized to make arrangements for the establishment of hospitals in the islands where leprous persons, in the incipient stages, may be treated in order to attempt a cure; and the said board and its agents shall have full power to discharge all such cases as it shall deem cured.

8. The board of health, or its agents, may require from patients such reasonable amount of labor as may be approved by the attending physicians; and may further make and publish such rules and regulations as by the said board may be considered adapted to ameliorate the condition of lepers.

9. No person not being a leper shall be allowed to visit or remain upon any land, place, or inclosure set apart for the isolation and confinement of lepers without the written permission of the president of the board or some officer authorized thereto by the board of health, under any circumstances whatever; and any person found upon such land, place, or inclosure without a written permission shall, upon conviction thereof before any police or district court, be fined in a sum not less than ——— nor more than ——— dollars for such offense, and in default of payment to be imprisoned at hard labor until the fine and costs of court are discharged in due course of law.

10. It shall be lawful for the board of health, through its president, to make and promulgate such rules and regulations as may be from time to time necessary for the government and control of the lepers placed under its charge, and such rules and regulations shall have the same force and effect as a statute law, provided always that they be approved by the proper authority and that they be published in two newspapers published in Manila.

11. Rules and regulations for lepers and attendants living at the leper settlement in reference to leaving the settlement, general sanitation and personal hygiene, building of houses, raising of animals, cultivating of lands, etc., will be made by the board of health in accordance with preceding section.

*General remarks.*—It is expected that many of the lepers or their friends will build their own houses, as a number of them are fairly well to do.

As the question of leprosy is one that will have to be reckoned with by the inhabitants of these islands for the next one hundred years, it is especially important that the best site be selected and the right beginning be made; and for this reason the appointment of a board which will carefully investigate and study this subject has been so persistently asked for. The former military governor approved the suggestions made on this subject by the Manila board of health and decided to appoint a board of three officers to investigate and formulate a working plan for the isolation of lepers as soon as the conditions in the islands permitted. This paper gives the general plan of handling this subject, and in some points has gone into detail of the legislation needed.

One of the points on which legislation is needed is the prohibition of the carrying of lepers by the masters of the interisland coasting boats without a proper permit, and compelling these same masters to carry lepers upon an order of the board of health.

*Suitable islands for lepers.*—Lutbang and Golo; about 60 miles from Manilia. They are very rich and poorly populated. These are the most suitable islands.

Polillo; north of Luzon, very large, and could contain very well 30,000 inhabitants.

Batag; beautiful and healthy place; is a few miles from Samar, but could easily be guarded by a small gunboat.

Besides these islands, Dr. Manuel Rogel y Lebres recommends: Jau, in Bohol; Clango, in Cebu; Apo or Refugio, in Negros; an island near Guimaras, in Panay; Limasand, in Leyte; Buad, in Samar; Simara, in Romblon.

The following reports from chief surgeons and other medical officers on duty in the Philippine Islands give interesting details of their service and of the medical and sanitary conditions affecting their commands.

## REPORT OF COL. CHARLES R. GREENLEAF, ASSISTANT SURGEON-GENERAL, UNITED STATES ARMY, CHIEF SURGEON DIVISION OF THE PHILIPPINES.

HEADQUARTERS DIVISION OF THE PHILIPPINES,
OFFICE OF THE CHIEF SURGEON,
*Manila, P. I., July 13, 1900.*

The SURGEON-GENERAL UNITED STATES ARMY.
(Through Military Channels.)

SIR: I have the honor to submit herewith a report of the operations of the medical department in the Division of the Philippines for the six months ending June 30, 1900. Detailed reports from chief surgeons and medical officers commanding hospitals accompany this report, and I have to request that selections be made from them for publication in their entirety in the annual report of the Surgeon-General.

*Health.*—The health of the army has been good, the sick report from all causes not exceeding 9.6 per cent of the total strength in any one month, the average for the six months being 8.8 per cent. The aggregate numerical sick report by months is herewith given:

| Date. | Total strength. | Effective strength. | Ineffective strength. | |
|---|---|---|---|---|
| | | | Number. | Per cent. |
| December, 1899 | 57,175 | 52,040 | 5,135 | 8.9 |
| January, 1900 | 63,423 | 57,833 | 5,590 | 8.81 |
| February, 1900 | 65,936 | 60,661 | 5,275 | 7.9 |
| March, 1900 | 63,441 | 57,857 | 5,584 | 8.79 |
| April, 1900 | 62,934 | 57,255 | 5,679 | 9.02 |
| May, 1900 | 63,484 | 57,359 | 6,125 | 9.65 |
| Average | | | | 8.845 |

The principal diseases were intestinal and malarial, the former showing 35.1 per cent and the latter 23.1 per cent to the whole number of cases. Of wounds and injuries there were 10.6 per cent and of venereal diseases 9.3 per cent. Preventable diseases give a percentage of 44.8 to the whole number.

The total number of deaths from all causes was 826, namely:

| | Officers. | Enlisted men. |
|---|---|---|
| Killed in action | 4 | 174 |
| Died of wounds | 3 | 40 |
| Accidental deaths | | 22 |
| Drowned | 2 | 33 |
| Suicides | 3 | 15 |
| Disease | 8 | 522 |
| Total | 20 | 806 |

Total wounded—26 officers, 348 enlisted men.

There were sent to the United States:

| | Regulars. | Volunteers. |
|---|---|---|
| Invalided on account of chronic disease | 507 | 379 |
| Insane | 60 | 41 |
| For discharge on surgeon's certificate | 144 | 102 |
| Total sent to the United States | 711 | 522 |

The relatively small percentage of sick in this army is, in my opinion, largely due to the care and attention given by officers and men to sanitation. An increased appreciation on their part of its beneficial result to health, and consequent increased efforts to carry out its rules with thoroughness, will result in a further diminution of the sick report. Roughly stated, one-half of the sickness in the army could have been prevented if everybody had obeyed the sanitary recommendations of the medical officers. The conditions of army life during the past six months have been much better than at any other period, since the troops have been able to sleep under shelter a great part of the time, and have opportunities to properly prepare their food, to sterilize the drinking water, and to give attention to cleanliness of clothing and person, and, above all, they have not during this period, when actively engaged in the field, been constantly exposed in the trenches and on the march to rain without opportunity to wear dry clothing or to sleep in a dry place. There is much significance in the fact that the smallest percentage of sick is shown in the February report, which covers the period of greatest military activity during the six months, viz, General Schwan's campaign in southern Luzon with over 20,000 men, the occupancy of many places in the southern islands, and the constant "hikes" by General MacArthur's men after ladrones and insurrectos in northern Luzon. These operations were conducted during the dry season, rains being exceptional. Although the heat during the middle of the day was excessive and the men were undergoing great physical exertion, the percentage of cases of heat exhaustion and sunstroke was only a trifle more than one-third of 1 per cent (0.38) to the whole number of sick.

Much has been said and written about the food of the soldier in the Tropics, and the composition of the regular ration has been criticised as being improper, in containing too much meat and too little starch. It has been alleged that the soldier should be fed somewhat after the manner of the native, largely on rice and other cereals and starchy foods, and the quantity of his meat (beef and bacon) diminished. However sound these views may be as scientific theories they are not supported by the results of practical experience. The soldier craves and gets, some way or other, the food he has been accustomed to eat at home, and he eats plenty of it. He wants meat twice or thrice a day, and he eats bacon or uses it in some form or other in his cooking whenever he can get it. He will not eat rice. He has a strong desire for sugar, and the addition of candy to the sales stores has been a great blessing to him. It does not appear, after careful observation, that the food furnished the soldier by the present ration produces sickness either by its variety, character, or quantity, provided it is properly cooked and is eaten in moderation. If the provisions of an act of Congress approved March 3, 1899, to allow the purchase of extra articles of diet for men in camp when serving in "debilitating climates," were reenacted and enforced, the soldier serving in the Tropics would have everything that could be desired in the way of a nutritive and health-giving dietary, since under the provisions of this act he may buy fresh vegetables and occasionally change the character of his meat diet by buying poultry, fresh fish, eggs, etc. It is to be regretted that advantage was not taken of this wise provision for varying the diet of the men in the Philippines, whose physical comfort could have been much improved by this means.

It has been found that the intestinal disorders of the Tropics are mostly due to specific germs and only in exceptional cases are induced by errors in diet. So far as we know the water of this country is their carrier, and when this is sterilized the main factor in the production and propagation of this class of disease is eliminated. The board of officers now studying tropical diseases has been of great assistance in investigating outbreaks of dysenteries and diarrheas, and their demonstrations to commanding officers have done a great deal toward convincing them of the necessity for care in this direction.

Nearly all of the diseases of the Tropics produce an effect on the general economy that does not follow similar diseases in the temperate regions, and that is a lowering of the vital force to such a degree that full recovery of health becomes impossible so long as the patient is in the tropical climate, and doubtful even after his return to and residence in a temperate climate. The marked increase in the number of regular soldiers over volunteers who have been invalided to the United States and discharged for disability is, I think, due to the baneful influence of the Cuban and Porto Rican climate on the regular soldiers who had not a sufficiently long residence in the United States before coming to the Philippines to fully recuperate from its effects, and therefore speedily succumbed to the new influences of this climate, from which recovery for them was impossible. Apparently the only disease from which complete recovery may be expected by residence at any of the sanitary points in the islands is malaria, but after such recovery reinfection frequently follows exposure. Tuberculosis is rapidly fatal, rheumatism becomes chronic, and I think that even the hot springs of the country, which have a great repute among natives for its cure, will not be effective with Americans. Diarrheas and dysenteries when chronic are incurable here; hence it is evident that there will be a constant stream of invalid patients from these islands to the United States, for the care and disposition of which an organized, well-digested system is desirable. As no report has been made to me regarding the results of transfers to the United States, I am unable to give any other information on the subject than what comes before me here. Regarding the insane, but little can be said, as there is no expert alienist on the islands[1] to examine into their cases and determine their character, nor is there any proper place here where they can be kept for observation. No other course is open, therefore, than to transfer to the United States all cases that, after such study as can be given, are believed to be genuine. Homesickness is a potent factor in producing the condition of melancholia into which many of the cases have passed. The isolation of the troops, their lack of knowledge of the native language, their enforced confinement to the towns they garrison, and the constant nervous strain incident to continued preparation against attack by the enemy combine to produce the mental condition which, for want of a better name, is called "insanity," and which is often completely and effectively cured by the journey to the United States. That this condition is a serious one is evidenced by the fact that the majority of suicides occur in this class of cases.

The health conditions among the natives have been carefully considered and attention is invited to my report (herewith attached) to the division commander, regarding municipal sanitation and the care of lepers; also to the report of Major Edie, president of the board of health of Manila. The division commander has taken a deep interest in these matters and by his direction measures are actively in progress toward carrying out the recommendations that have been made.

*Hospitals.*—The general principle followed in the management of hospitals has been their establishment in regiments for emergency purposes only, from which those who are very sick may be sent to field hospitals that are equipped to care for such cases, these in turn being evacuated into base hospitals, located at points convenient to rail or water transportation, from whence cases requiring it may be transferred to the United States directly or via Manila. These and the larger hospitals at Manila are equipped with the most complete material available. All have special diet kitchens and operating rooms, and nearly all have pathological laboratories, while the personnel of the Manila hospitals and several in the provinces includes a corps of trained female nurses. One of the hospitals at Manila serves as a general depot for the reception and distribution of cases arriving by water transportation and of those requiring the services of specialists, either for surgical, medical, or diagnostic purposes, its staff including men specially trained in these branches. It has a complete pathological laboratory, in which the board of medical officers who are studying tropical diseases carries on that part of its work. Here also the army medical board holds its sessions. Infectious diseases are treated in separate and isolated wards and the general morgue is located near it. An emergency hospital, under the direct control of this office, has been established and equipped, near the dock of the captain of the port, in Manila, to receive and care for, temporarily, patients who arrive on vessels from various parts of the archipelago, in which provision is also made for accident and other emergency cases in the city and from the railway.

The cases for transfer to the United States as invalided are selected by a board of three medical officers in each of the Manila hospitals, who carefully examine the men and recommend only those who have been long ill and whose lives will not be jeopardized by the sea voyage. The cases usually selected are tuberculosis, chronic dysentery, diarrhea, chronic malarial poisoning, rheumatism, and the insane. As previously stated, what the results of the transfers are I am unable to say, as no report on that subject has been sent me from the United States. Several reports have, however, been made regarding intestinal cases returned to duty in these islands from the United States, to the effect that there was a speedy return of the disease, with consequent readmission to hospital. This subject demands careful study, for which time and experience is needed. A similar study should be given to the subject of establishing sanitaria for troops that are worn out by field service and its consequent exposures. It is said that the Spaniards had selected sites in the uplands of the island of Luzon for the construction of barracks for this purpose, but I have not seen their reports. So far our experience is against such a procedure, since the most virulent forms of malarial poisoning have been found among troops sent into the elevated valleys for station, or among those who have campaigned in the mountains. The lowlands appear to be the most healthful parts of the islands for Americans. This subject is now under investigation.

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[1] At the time this report was written an expert was en route to Manila, P. I., to undertake these duties.

There has been but little done in the construction of hospitals, partly because the most desirable points for their location are not yet known, and partly because of the high price of lumber, due to an alleged "combine" among dealers. Two wards of nipa have been built at the Santa Mesa Hospital, at Manila, which increases the capacity of that hospital to 1,000 beds. The construction of additional buildings for 250 beds at the hospital at Corregidor Island was authorized, but the work was suspended on account of the price of lumber. Recommendation will be made to build a new hospital at Iloilo, and to enlarge the hospital at Dagupan, and extensive repairs will be made on other buildings now used as hospitals throughout the archipelago.

*Medical personnel.*—The administration of the department has been much embarrassed by the scarcity of its personnel. On my arrival the hospitals were undermanned, medical officers being obliged to attend an average of over 100 patients each, and a great many military organizations were without medical care. There were frequent instances of contact with the enemy where wounded men were without any other surgical assistance than that which their comrades could give them. As the troops advanced and were separated from each other to garrison towns, this scarcity increased; frequent requests were made by my predecessor for additional medical officers without avail, and I repeated them, but it was not until the month of March that relief came in the arrival of a small detachment of medical officers from the States, which was followed by others at a later period; the term of service of many contract doctors had meanwhile expired and a great many demanded to be sent home; the division commander approved my recommendation to hold to service, as a military necessity, as many as were absolutely necessary to care for the sick until further relief should arrive, and this is now being done. I have to record the fact that one, Dr. Atkinson, was base enough to desert the service, leaving the sick intrusted to his charge without medical assistance, and taking passage on a commercial steamer to his home in Massachusetts. There are now 120 stations occupied by troops without medical officers; at some of them members of the Hospital Corps perform the medical duty as best they can, at others there is no medical assistance. Many medical officers are obliged to attend from 3 to 5 stations, visiting them at great personal risk, since the country is infested with ladrones and insurgents, and it is not always possible to obtain proper escorts; they deserve the highest praise for their devotion to duty and their heroism.[1] In view of the uncertainty of the tenure of office of contract surgeons, I recommend legislation by which they may be commissioned and given such military status as will insure their continuance in service for the same term and under similar conditions as are required of volunteer officers.

The hospital corps also has been undermanned, and recourse has been had to the employment of natives and Chinese to meet the deficit, who have done satisfactory work, and indeed there is much duty, such as policing, the sanitary service, etc., that can be done only by them. I recommend that authority be given to employ or enlist a certain number of them for permanent service with the medical department in the Tropics.

In view of the large number of men of the Hospital Corps who were found to be unfamiliar with their duties, a system of instruction was organized at Hospital No. 3, Manila, for the purpose of teaching the men who were gathered at that station after arrival from the United States and awaiting assignment, such of their elementary duties as was possible in that limited time. The experiment was successful, and the division commander (General MacArthur) authorized by general orders the establishment of a company of instruction, which was fully organized and placed in operation by Major (then Captain) Kulp, and is now in successful operation. The first class of 43 members was graduated on June 15, 1900, in the presence of the general commanding, with appropriate ceremonies.

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[1] See remarks on page 630.

The female nurses have done excellent service. Up to the time of my arrival there was none on duty outside of Manila, but since the islands have been fully occupied by troops they have been sent in small detachments to the larger hospitals in the several military departments, and the field for their service has been accordingly largely extended. Their influence on the sick and on the well has been a good one, and they have, as a rule, been discreet in conduct, amenable to discipline, and possessed of professional ability of a high order.

In hospitals where the nursing is done by females members of the Hospital Corps have but little opportunity for practical clinical instruction or work, their service being almost exclusively given to the police of the wards. For this reason I am of the opinion that where it is deemed advisable to employ female nurses there should not be any hospital corps men for ward duty, the nursing being done exclusively by the female nurses, and that natives should be employed for the ordinary police service. The nurses' ration is insufficient, especially in regard to the night lunch, unless there is a large number of them on duty in the hospital, and I recommend that authority be obtained to permit them to be subsisted from what is known as the 40 cents per day allowance. In fact, the efficiency of the diet department in hospitals would be much increased by extending the authority to use the allowance for the entire personnel, since the present system involves the constant use of two kitchens and separate subsistence accounts for the sick and their attendants, which are seldom correctly kept.

*Sanitation.*—Experience has taught a majority of the troops the necessity for a strict compliance with the more important regulations for preserving health. As a rule camps and quarters are properly policed, care is taken in the disposal of excreta, boiled water is almost universally used, and attention is paid to the proper cooking of food. Line officers join with medical officers in efforts to maintain a proper condition of cleanliness of the habitations and the persons of the troops. The dry-earth system is used in the majority of stations, excreta being removed by native labor. Where the pit system is necessary the contents are sterilized by fire, coal oil being used as fuel, and in Manila the odorless excavators are used. The Waterhouse-Forbes sterilizer has been of the greatest benefit, and it is hoped that before long every company in the army will be supplied with one. Numerous instances of individual infection by typhoid fever, which is endemic in the islands, have occurred, but there has been no serious extension of the disease among the troops, the sanitary precautions that have been taken having proved sufficient to check it at once. Medical officers are instructed to use the same precautions on the occurrence of a case of typhoid fever that they would with smallpox, viz, isolation of the case and disinfection of all excreta, personal belongings, quarters, and sinks; segregation of suspects, and vigilance in watching the noninfected members of the command. In two instances local epidemics assumed rather alarming proportions before the nature of the disease was recognized—one in a detachment of the Forty-second Infantry at Paete and the other in the Thirty-ninth Infantry at San Pablo, both on Laguna de Bay. Prompt measures were taken along the lines above mentioned. The sick were removed to Manila hospitals, suspects placed in detention camps, thorough cleansing of the towns and quarters, with subsequent disinfection, etc., and the spread of the disease was promptly and completely checked. In Manila the work of the board of health, under the able management of Major Edie, has been very effective. The city has been cleaned, and is kept as clean as conditions will permit; systematic inspections of the food supply are made, the markets are kept in order, and the sick poor cared for. Special attention has been given to the work of checking the advance of bubonic plague, which made its appearance in January. So far there has been no extension of the disease, sporadic cases alone having occurred. Arrangements are now being made to dispose of the leper population of the islands, which is estimated at about 30,000 in number. A projet has been approved by the division commander for their segregation on an island where they can be properly cared for, and under intelligent direction and supervision be made self-supporting. A board of officers is now examining several islands with a view of selecting one that will be suitable for the purpose, after which the measures now formulated for gathering them and establishing the colony will be carried out. A system under which the native population should be vaccinated was instituted by Major Maus in northern Luzon and extended to all the departments in the division. It has been successfully carried out, and smallpox has been almost entirely checked in its progress, but few cases appearing among the troops. There is a large population in those portions of the islands that are still under the influence of the insurgents that can not be reached at present, but so soon as it is safe for vaccinators to go among the people they are sent. Vaccine farms have been established in the Department of the Visayas and in Mindanao, it having been found that the virus sent from Manila was often spoiled during the journey to the southern islands.

*Means of transportation.*—The hospital ship *Relief* has been utilized to expedite the transportation of medical supplies to points along the coast. During the campaigns under General MacArthur in northern Luzon and General Schwan in southern Luzon her service in this respect was invaluable, and without her there would have been great hardship and suffering. She followed the movements of the troops, touching at such points as were convenient to take off the wounded and those suffering from heat exhaustion, and landing such supplies as were needful. This service was often performed at great personal risk, and on several occasions the launch was fired on, Major Perley narrowly escaping injury at Vigan and at Bacoor. Her officers and men deserve great credit for their service on these occasions. Later on she took supplies to the ports on the west coast of Luzon and to those in the southern islands and the Camarines. I have in previous communications set forth the necessity for light-draft steamers for the use of the Medical Department in these islands. While the Quartermaster's Department claims theoretically to be able to meet the wants of the Medical Department in the transportation of supplies and to give precedence to it in loading its ships, it does not do so practically, and, as as a matter of fact, it can not. So far as the intentions of its officers in this division are concerned, they are good, but military necessities often dominate all other claims, and the Medical Department has been obliged to wait at times when the interests of the sick required prompt action. There can never, in my opinion, be a thoroughly efficient administration of the supply department of the medical service until it has its own water transportation. For hospital service on Laguna de Bay and for ports established on Manila Bay near the city the launch *New York* is supplied and has done fine service. Like the *Relief*, she was used with great success during General Schwan's campaign, and when his troops appeared at Santa Cruz at the end of the work she was in waiting with supplies and to take care of the wounded. Acting Hospital Steward Hobson, in charge, deserves special mention for excellent service on this launch. He has been on duty with her since the occupation of Manila, and has often been under fire. The only railway in Luzon is laid between Manila and Dagupan, and is about 120 miles long. It was of great service in bringing wounded to Manila during the expedition of General MacArthur, but no special arrangement had been made for their comfort on the cars in use. Two cars are now fitted with folding steamer bunks for eight patients. There is a small dispensary and a closet on each car, which carries a personnel of an acting hospital steward and two privates. Patients are transferred from points south of Angeles to the hospital at that station and north of that to Dagupan. The service as now organized is very efficient. Ambulances are assigned to commands wherever they are needed, and, while the number is small, they do good service.

*Medical supplies.*—Until quite recently there has been a general depot at Manila, with subdepots at such points in the division as could be easily reached by water and rail transportation and were convenient to the troops. These and all interior hospitals, base and regimental, were as fully supplied in May as their storage facilities would permit, to meet the wants of the troops during the rainy and typhoon seasons, when travel would be difficult or altogether interrupted.

The methods of issue from the United States are not as satisfactory as they should be, and the points of failure have been submitted to the Surgeon-General for his action. Much embarrassment has been experienced in the length of time consumed in getting supplies from the United States, and the irregularity of their shipment and arrival here have made it impossible to lay any definite plans for responding to calls on the central depot. The losses by disaster at sea have been heavy, and many packages have gone astray, which made it necessary to purchase somewhat extensively in local markets and from Japan to make good the deficits. The ordinary expenditure of medical supplies for the troops is much larger in this climate than in the United States, owing to the extensive prevalence of malarial and intestinal disorders and the necessity for prophylaxis. To this must be added the issues to small commands, which are proportionately larger than to commands of greater size. Although there is no official record of the fact, I am satisfied that a heavy drain also falls upon the supply department through issues to the indigent sick natives, whose appeals to medical officers for relief can not be resisted, in spite of orders forbidding such use of medical supplies that have been issued to the troops. As a general rule, however, it has been possible by judicious management to meet most of the demands, and there has as yet been no serious complaint of shortcomings in that direction. By a recent order of the division commander depots of supply have been established and equipped for the departments of Northern and Southern Luzon, and hereafter each department will issue its own supplies to the troops within its limits.

Requisition has been made for thirteen ice machines, which will be installed at various points in the division and supply the hospitals at all stations accessible to them. Five are already in successful operation at Iloilo, Cebu, Jolo, Cavite, and First Reserve hospital, Manila.

*General remarks.*—The officers and men of the division have been zealous and diligent in their service, and in many instances have cheerfully performed double duty, involving great hardship and personal risk. I wish to invite special attention to the admirable service performed by Maj. L. M. Maus, surgeon, United States Army, who took medical charge of the Second Division when its medical service was in a deplorable state. He soon established an efficient working system, restored order, replenished supplies, established hospitals, and procured reports that had been long neglected. He has displayed a high order of administrative ability, and deserves official recognition for his service.

Capt. John S. Kulp, assistant surgeon, United States Army (now major and surgeon, United States Volunteers), has won well-deserved promotion for his ability in the management of hospital No. 3, Manila, and in the organization and successful conduct of the school of instruction for the Hospital Corps.

A number of medical officers have distinguished themselves by special service in the field and in administrative positions, receiving commendation and special mention from the officers of the line with whom they served. Among them I desire to mention:

Capt. Paul Shillock, assistant surgeon, United States Army, special field service.

First Lieut. Richard P. Strong, assistant surgeon, United States Army, special field service and work in pathology.

First Lieut. Powell C. Fauntleroy, assistant surgeon, United States Army, organizing and management of hospital at Angeles.

Maj. Franklin A. Meacham, surgeon, United States Volunteers, special field service.

Capt. George W. Mathews, surgeon, Thirty-sixth Infantry, United States Volunteers, special field service.

Maj. George H. Penrose, surgeon, United States Volunteers, special field service and hospital organization.

First Lieut. Isaac W. Brewer, jr., assistant surgeon, United States Army, special field service.

First Lieut. Henry S. Greenleaf, assistant surgeon, United States Army, with Sixteenth Infantry in the field and chief surgeon, Aparri.

First Lieut. John Carling, assistant surgeon, Thirty-fifth Infantry, United States Volunteers, special field service.

Contract Surg. Joseph C. Reifsnyder, special field service.

Contract Surg. H. E. Stafford, special field service.

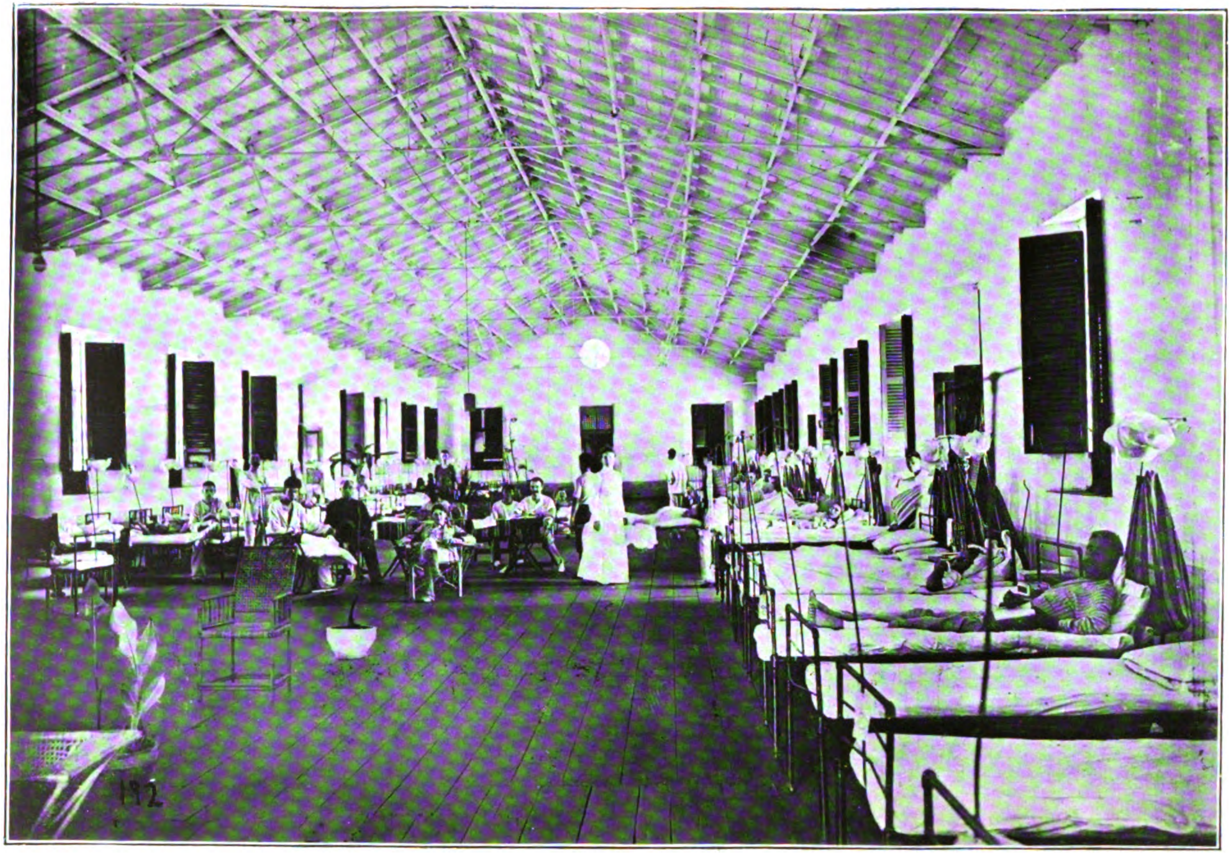
And others whose names have been previously brought to the notice of the Department. I earnestly trust that in the interest of the service and of the officers their special duties may receive recognition and that whatever promotions are at the disposal of the Department for officers in this division may be given exclusively to those officers who have earned them by faithful and meritorious service in the division.

Finally, I wish to join with the medical officers in this division in expressing our appreciation of the devotion to duty of our late comrades First Lieutenants Westnedge and Higley, assistant surgeons, United States Army, whose lives were sacrificed while caring for the sick and wounded that had been placed under their charge. Although sick men themselves and frequently urged to enter hospital, they remained faithfully at their post of duty until compelled by physical weakness to leave it; too late, however, to save their lives.

By reason of their bulk, the separate reports of chief surgeons and commanding officers of hospitals are forwarded direct by mail.

## REPORT ON THE FIRST RESERVE HOSPITAL, MANILA, P. I., BY MAJ. W. R. HALL, SURGEON, UNITED STATES ARMY, COMMANDING OFFICER.

The First Reserve Hospital was formerly the Spanish military hospital. It is located about one-fourth of a mile east of the walled city, between it and the Pasig River, which forms the eastern boundary of the hospital grounds. The Spanish hospital proper consisted of a series of buildings erected around a rectangular courtyard, wards on each side, kitchen and dispensary at one end, and a ward and administrative offices at the other end. Storehouses and residences of officials occupied the space between the eastern end of the hospital buildings and the river. A large m-shaped building was used for chapel purposes and rooms for priests and nursing sisters. This wing is now used for the dispensary, surgical ward 7, and operating rooms. The front of the grounds is formed by Calle Arroceros. The northern side is closed by a high stone wall, separating the grounds from a market; the southern side is bounded by Calle Conception, on which street, about 100 meters east of the hospital, is the officers' ward. All the buildings east of the wall are now used



FIRST RESERVE HOSPITAL, WARD NO. 3.

by the medical supply depot for storerooms except one, which is used by the hospital for laboratory purposes. Across Arroceros street, opposite the northern half, is the botanical garden, the pride of Manila, while the southern half is faced by a large, fenced-in grassplot, containing a good-sized brick building, used in Spanish times as a school of arts and engineering, but now used as a warehouse by the medical supply depot and as a laboratory and repair shop by the Signal Corps. On January 1, 1900, most of the tent wards belonging to the hospital, as well as tents for quartering the hospital corps detachment, were located on this portion of land, but as the hospital was contracted in bed capacity these tents were removed, and now, June 1, 1900, the plat is vacant except for the building mentioned. The inner quadrangle is neatly laid out with grassplots and flowers and planted with tropical trees and bushes. Near the kitchen is situated a frame structure used as a reading room for patients. The ground on which the hospital is built has a gentle slope toward the Pasig River. The wards, built of a stone composition, mostly covered with tile roofs, are roomy and well ventilated. They are without ceilings and all have an abundance of large windows. The sewerage was far from satisfactory during January and February, but within the last two months a new system of sewerage has been installed. Nearly all the buildings are supplied with modern water-closets, and most of the old faults have been remedied. Each ward possesses a bathroom with shower bath, and three bathrooms, with four showers in each, are provided for the Hospital Corps. The water supply is ample and of good quality, obtained from the city water system. The drinking water is distilled and is obtained from the ice plant. Rations are drawn every ten days. Cooking is done by Chinamen, paid out of the public funds. The rations issued to the men are of the best, and there is sufficient variety to prevent sameness. On January 1 the wards in use numbered 27, of which 11 were tent wards and the remainder were in buildings.

A necessary institution connected with this hospital is the steam launch. This is a good-sized boat, capable of accommodating 50 to 60 patients with the necessary attendants. In a place like this, where so much of transportation is by water, a steam launch is an absolute necessity. Patients are brought on the boat to this hospital, as well as to Santa Mesa Hospital, from the various posts on the lake and river, as well as from the shores of the bay. Patients are transferred from hospital to the transports about to depart for the United States, the sick and their nurses are taken from steamers arriving in the bay and are transferred to hospitals ashore, parties of hospital corps men arriving on transports are landed with their baggage, emergency calls from posts on the river or on the lake for medical officers or supplies are answered, and official inspection of different posts are made by the chief surgeon. The crew consists of natives, paid by the Quartermaster's Department.

*Smallpox hospital.*—The smallpox hospital, which is a part of the First Reserve Hospital, is 500 meters south of the hospital proper. The principal building is a frame structure with a nipa roof, 111 by 54 feet, and is divided into two wards. Besides this there is a tent ward consisting of two framed and floored hospital tents for variola suspects and one tent ward for bubonic plague, besides tents for storerooms and quarters for the attendants and guard. The staff of the smallpox hospital consists of an acting assistant surgeon, five privates of the Hospital Corps, and two native laborers. The surgeon as well as the attendants live on the premises.

*Laundry work.*—The laundry work is done at a steam laundry in the city. The linen is carted away every day and returned clean and ironed every second day. The average cost during the five months from January 1 to June 1, 1900, was $1.05 per hundred pieces.

*Diet and kitchens.*—The rations for the Hospital Corps are drawn every ten days from the commissary and are sufficient in quantity, of good quality, and sufficiently varied in composition. The articles for patients' diets are purchased from the commissary from the daily allowance of 40 cents, which is found ample to provide good, sufficient, and wholesome diet. The food is cooked by a Chinese cook and is served by hospital corps men. The light-diet kitchen is a separate establishment. Supplies are obtained as needed from the hospital commissary storeroom.

A pathological laboratory, well and thoroughly equipped, is connected with this hospital. At the present time First Lieut. R. P. Strong, assistant surgeon, United States Army, is in charge. All examinations of blood, urine, fæces, sputum, and cultures of all varieties, as well as examinations of specimens obtained from necropsies, are made at this laboratory. These are made not only for this hospital, but for all hospitals and commands in and near Manila, which lack facilities for microscopical investigation or chemical analysis. All necropsies are made at the morgue attached to the hospital.

*Ambulance service.*—The land transportation consists of 4 ambulances and 16 mules. These vehicles call about the city and outlying stations, at boat landings and the railroad station, for patients whose arrival or whose needs are telegraphed to the hospital. There is also a separate ambulance for smallpox patients.

*Ice machine.*—The ice machine is owned by the Medical Department, but is operated by civilian employees paid by the Quartermaster's Department. The daily output is about 3,700 pounds. From this a sufficiency is retained for the use of this hospital, while the balance is supplied to hospital No. 3, the Second Reserve Hospital, occasionally to Santa Mesa Hospital, and on approved orders to some of the smaller regimental hospitals in the city. On several occasions ice has been sent from here by launch to the hospital at Bacoor, across the bay. A distilling apparatus is connected with the ice plant, which furnishes pure drinking water to this hospital and adjacent hospitals, also to some of the commands in the city. A sterilizing apparatus is operated in connection with the engine running the ice machine.

*Female nurses.*—There were 77 contract nurses at the hospital on January 1, 1900. During the month 22 were sent away to other stations. In February, 5 more left the hospital, and as the bed capacity of the hospital diminished more of the nurses were detailed to other stations until the number on duty June 1, 1900, was but 19. The nurses' quarters are situated about ten minutes' walk from the hospital. The quarters consist of a large square house, two stories. It contains thirteen sleeping rooms, each accommodating four nurses, large dining room, bathrooms, and kitchen. Part of the ground floor is taken up by a large airy hall or lobby forming a delightful place for rest; in the second story is a large reception room. The grounds around the house are very beautiful. Palms, mangoes, banana and other tropical trees grow in abundance, while a handsome fountain adds to the beauty of the place. The nurses draw the regular army ration, which is prepared for them by a Chinese cook under the supervision of one of the nurses. The general health of the nurses has been good. Ambulances are provided to carry the nurses to and from the hospital during inclement weather and at the lunch hour. The work of the nurses has been satisfactory. They are faithful, conscientious, and untiring in their efforts to assist the medical officers in the care of the sick and wounded. Several nurses have volunteered their services for smallpox cases. The surgical work of the nurses at this hospital has been considerable and successful. At the present time the demand for nurses from the different posts in these islands exceeds the supply. A dietist has charge of the light and special diets at this hospital.

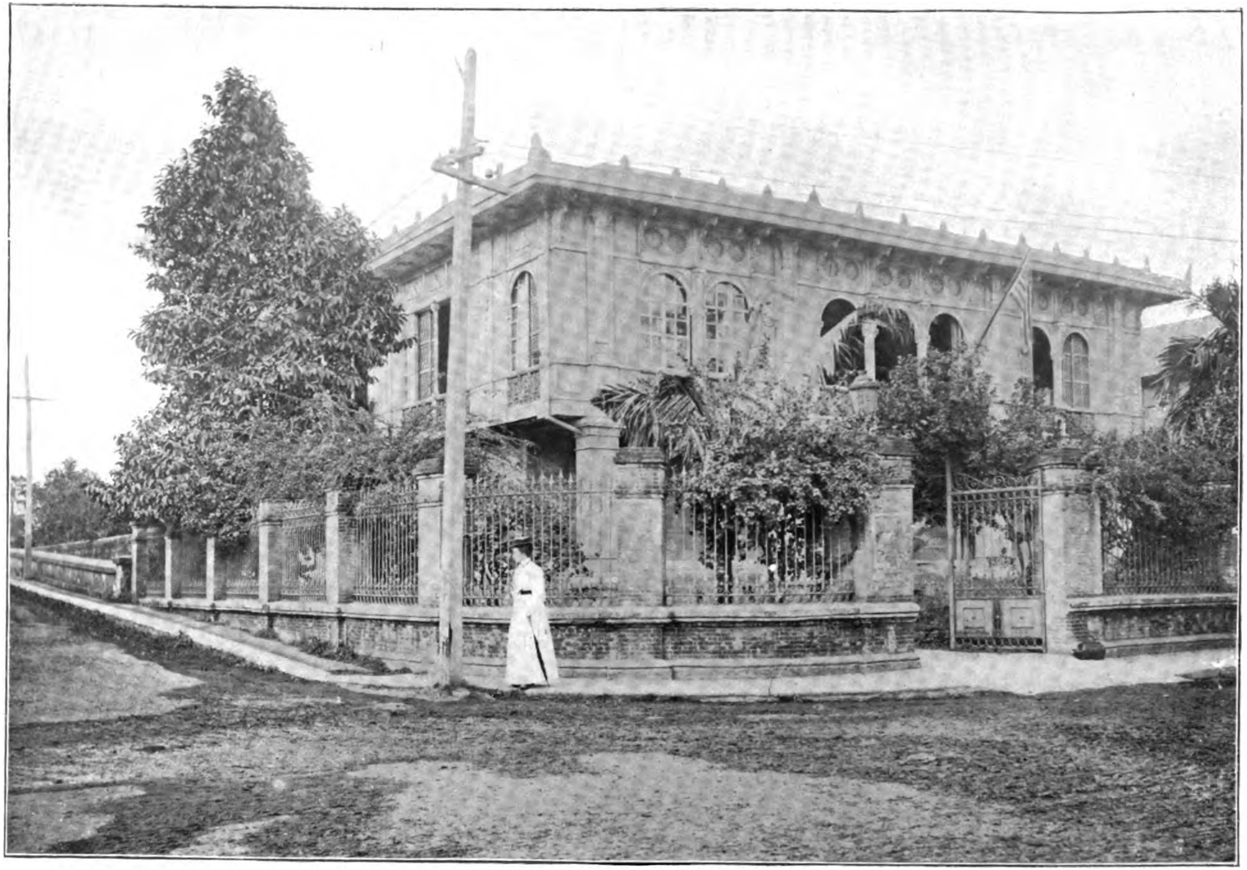
*Hospital Corps.*—The hospital corps detachment on duty at this hospital on January 1, 1900, numbered 7 hospital stewards, 3 acting hospital stewards, and 183 privates. The majority of the men deserve credit for the manner in which they performed their duties, often very arduous, as during the times when the wards were filled up to their limits. It then required patience, self-denial, and zeal to keep up with the work and provide the necessary care for the sick and wounded. Especial credit is due to men who performed the duty of wardmaster in some of the fever and dysentery wards. They worked early and late, doing their best to relieve and comfort the suffering and render the best possible aid to the ward surgeons. In view of the small amount of pay these men receive, it shows that the chief motive was an unselfish desire to help suffering humanity. It would seem not only just, but also good policy, if some inducement were held out to men to perform duty as wardmaster by a little higher pay than the other privates of the Hospital Corps receive. The hospital stewards on duty at this hospital during January 1 to June 1 have invariably performed their duties faithfully and well.

The surgical department has always occupied a prominent position in this hospital, a good many conditions combining to make it the most important in the city of Manila. The operating rooms are situated in the building fronting on Calle Arroceros, and comprise three rooms—one for operations; one for examinations, minor operations, and dressings; and an annex for dressing of Dhobie-itch cases, and the like. The staff consists of an operator, two competent hospital corps men, and two female contract nurses. The equipment is complete, and the results have been good. A ward for surgical cases adjoins the operating room; thus patients, after capital operations, have to be carried but a short distance to their ward. For a report of some of the surgical work done at this hospital see page 836.

### REPORT ON THE SECOND RESERVE HOSPITAL, MANILA, BY MAJ. EDWARD B. MOSELEY, SURGEON, UNITED STATES ARMY.

The Second Reserve Hospital was opened October 3, 1898, by Capt. F. R. Keefer, assistant surgeon, United States Army, in a building in the Malate district of the city of Manila, known as the Convent of the Assumption.

The building, which was a boarding school for girls, is modern, built of brick and stone in the best manner, has ceilings 18 feet in height, handsome tiled floors in most of the large rooms, enormous corridors, and where tiles are not used the floors are made of native hard wood, the boards averaging 14 inches in width, and taking



NURSES' HOME, MANILA, P. I.

a polish like mahogany. The windows on all sides of the building average 9 feet high and 8 feet wide, and give ample light and ventilation in most of the wards.

The building is in the form of an irregular L, and is divided in such a way that twenty wards are available, ranging in size from 27 by 28 feet to 44 by 75½ feet, in addition to which are two corridors in the second-story, 149 by 13½ feet and 215 by 13½ feet in size, which are used for the accommodation of patients, to which they are particularly adapted, being on the outer face of the building, and therefore particularly light and airy. The wards opening on these corridors receive a large amount of light and air owing to the enormous size and large number of the windows in the corridors. The surgical ward and the largest medical ward are particularly well adapted to their respective uses, being very large, light, and cheerful.

On the first floor, around the greater portion of the building, is a porch, floored with handsome tiles, which can be inclosed by movable screens which hang between the pillars supporting the upper second-story corridors. These screens can be lowered to exclude the sun or rain, or to convert the corridor into wards for convalescent patients in case of necessity.

The chapel, a large room, is filled with property belonging to the convent, and can not be used for any purpose, this being specified in the lease made with the sisters by the government.

Dining rooms for full and light diet patients are situated on the first floor; also offices of the commanding officer and clerks. The main kitchen is in a temporary building, erected in the rear of the hospital, which contains four army ranges, and is supplied with water and other conveniences. The special-diet kitchen is in the second story at the end of one wing; it is 43 by 44 feet, with windows on three sides, giving ample light and ventilation. The special-diet cooking is done on several oil stoves, which are very useful for this purpose, as they do not produce the great heat in the building that would be caused by coal stoves, nor do they produce ashes and dust.

A bathroom containing eight porcelain tubs, for use of patients and hospital corps men, is situated at one end of the building on the first floor. Bathrooms and water-closets for medical officers and sick officers are in the opposite end of the building in the second story, near the rooms occupied by resident medical officers and the officers' wards, which accommodate 12 patients.

The dry-earth system of sinks is used for patients and hospital corps men, the boxes being placed in tents conveniently located. Excreta, properly disinfected, is removed by civilian scavengers, under contract, twice a day.

The hospital corps men sleep in roomy and well-lighted dormitories on the ground floor, men on night duty having a separate room, where they can be undisturbed.

Two storerooms on the first floor are used, one for medical property and one for clothing, personal property, and arms of patients. In the rear, at a good distance, is built a stable for the accommodation of government animals and horses of officers. In a separate building is a storeroom for commissary supplies and for carpenter shop and storage of bulky articles. A dispensary, with separate storeroom for drugs and medical supplies, is situated about the center of the building on the first floor.

The grounds around the hospital, about 10 acres in extent, are entirely surrounded by a high stone wall and contain numerous trees, flowering plants, fountains, etc., making the place particularly retired from public view, but very cheerful for patients, who are able to sit in the shade and obtain the benefits of the sea breeze, which is usually strong, owing to the proximity of Manila Bay.

The capacity of the hospital is 312 without crowding, and an increase of 50 could be provided for at any time. It is conducted by 4 medical officers, 2 hospital stewards, 3 acting hospital stewards, 58 privates of the hospital corps, 12 contract nurses, and 19 Chinese and native employees, the latter being employed in the kitchens and various menial work.

This building is so remarkably well adapted by location, by its adaptability as to light, air, sun, and cheerful surroundings, that it is to be hoped it will be continued under lease for hospital purposes indefinitely.

## REPORT ON HOSPITAL NO. 3, BY CAPT. JOHN J. KULP, ASSISTANT SURGEON, UNITED STATES ARMY, COMMANDING THE HOSPITAL, RENDERED TO THE CHIEF SURGEON, DIVISION OF THE PHILIPPINES, JUNE 15, 1900.

Hospital No. 3 was established by General Orders, No. 7, Department of the Pacific and Eighth Army Corps, January 19, 1900, from the supplementary wards, without change of personnel or administration.

The institution consists of seven large wooden buildings, each having a single story, elevated 3 feet above the ground. The ceilings are high and the ventilation practically perfect. The general plan is that of a triangle attached to a square. Around the sides of the square are six wards, each having an average capacity of forty-eight beds, and occupying the sides of the triangle are the baths, laundry, main kitchen, cold storage, carpenter shop, barracks, commanding officer's quarters, quartermaster storehouse, and clothing room. In the building which forms the front of the square are the offices of the commanding officer, officer of the day and registrar, the laboratory, consultation room, commissary storeroom, linen room, medical storeroom, and dispensary. Ward F (acute surgical), which is also in this building, communicates directly with the operating room.

The situation of the hospital is in the district of Ermita, just beyond the walls of the city and about 300 yards from the bay. The proximity of the latter, and the Luneta, renders the place an agreeable one for convalescents, while the buildings and grounds are well adapted for hospital purposes. In this connection it may be stated that the illumination is by incandescent lights, the water supply is from the city mains, and garbage is carried away by boats twice daily.

The bed capacity of the hospital for patients is 297, with 57.5 square feet of floor per bed, and as a rule there are few vacancies. Each ward has attached to it rooms for the hospital corps men on duty and for the property of patients. The number of each bed corresponds with that of a particular locker, and also with that on the patient's card in the office of the registrar. Incoming patients are examined by the medical officer of the day as soon as received; the diagnosis is confirmed if practicable, the diet outlined, and any necessary medication prescribed before the patient is sent to his ward. Each patient is seen at least twice daily by his ward surgeon, who is responsible for everything pertaining to his ward. A permanent consulting board, consisting of the commanding officer, the officer of the day, and the surgeon, is called whenever requested by the latter. The laboratory is equipped for all ordinary clinical work, and the pathologist makes examinations of blood, urine, sputum, or fæces whenever requested by the ward surgeons. A complete record of treatment and of the more important symptoms is kept and filed for reference. Meals for convalescents are served in the main dining hall, which seats 240. Four regular diet lists are furnished, one of which is entirely in the hands of the ward surgeon. A record is kept of every meal served.

*Certificates of disability.*—This hospital receives for observation all men who have been recommended for discharge on surgeon's certificate of disability. This entails much labor of the highest responsibility, no less than 198 men having been sent to the United States for discharge, and a number convicted of malingering or returned to duty because of recovery or absence of disability. The most common forms of disease are diarrhea, dysentery, malarial fever, and skin and pulmonary affections. Since the renaming of the hospital 1,038 patients have been admitted (whole number 4,207), of whom 5 (whole number 13) have died.

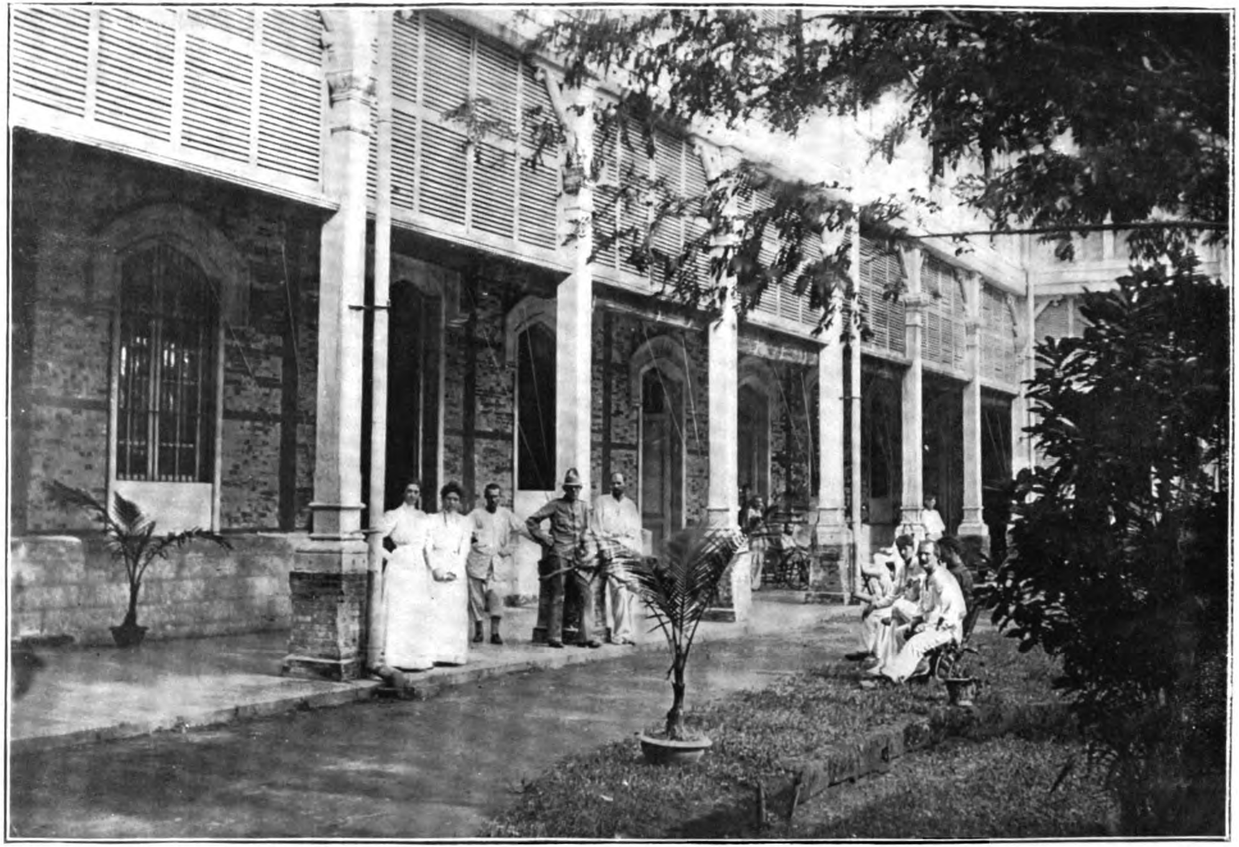
Second in importance only to the treatment of the sick is the instruction of the men of the Hospital Corps. The sanitary soldier of to-day has so many and such varied duties that it is considered indispensable that he should see service, not only in the field and hospital, but in every department of the latter as well. In the field he shares every danger with his brother of the line, and is of value in proportion to the training he has received in garrison. This training consists of (*a*) instruction, (*b*) discipline, and (*c*) experience.

The practical instruction in this hospital consists in handling patients, first-aid exercises, and demonstrations and bedside instruction in ward work. The theoretical instruction is by means of lectures on pharmacy, elementary anatomy, minor surgery, first-aid regulations, clerical work, and nursing. No better form of discipline than military discipline is known, and no better method of enforcing exact and unquestioning obedience is known than by military drill. Every man on duty in the hospital is required to attend five drills weekly, and a soldierly bearing and proper uniform is insisted on at all times. Experience in the manifold duties of the hospital corps private can be best given by constant rotation in station. This involves much labor on the part of the officers of an institution in order not to impair its efficiency, but the final results are believed to justify the extra work.

The following personnel is attached to the hospital:

Medical officers, 2; acting assistant surgeons, 3; noncommissioned officers, 7; privates, 50, and natives, 11; total, 73. The hospital furnishes its own guard, and there are no white civilians, either male or female, attached to it. It is believed that with a properly instructed detachment civilian aid is not only not necessary, but is injurious both in regard to the maintenance of discipline and as tending to prevent the proper instruction of the Hospital Corps.

*Repairs and alterations.*—Since their use by the medical department these barracks, formerly belonging to the Seventy-third Spanish Infantry, have been so remodeled and improved as to be hardly recognizable. The filth natural to every building in Manila was not lessened by volunteer occupation, and when first assigned for hospi-



VERANDA AND ENTRANCE TO FIRST-STORY WARDS OF SECOND RESERVE HOSPITAL.

tal purposes a more dilapidated lot of buildings it would have been difficult to find. The floor space is three-fourths of an acre in extent, and beneath every building there was tons of filth. When it is considered that the institution has been entirely reroofed, repainted, complete cement walks built, and many portions remodeled, some idea of the transformation can be obtained. A large portion of this work has been done by the men of the Hospital Corps, who have displayed an intelligent interest which is gratifying.

The military hospital differs from the civil in almost every particular of patient, administration, and personnel. Its commanding officer possesses graver responsibilities and greater authority than that of a mere medical superintendent. The technical knowledge of decisions, regulations, and papers which is required to protect the Government, on the one hand, and prevent injustice to the soldier patient, on the other, can be learned from neither book nor school. Physicians and surgeons can always be obtained from civil life in times of sudden army expansion, and after the necessity has passed can return to their waiting homes. This is not the case with the medical officers, whose lives and services are the property of the Government. Whatever increases their value is a gain to the service, and it seems but natural that whenever practicable these men should be taught administrative work in its only school—that of experience. It is believed that the regular medical officers who have served in this hospital have profited by this technical experience so necessary to the military surgeon.

## REPORT OF MAJ. H. P. BIRMINGHAM, SURGEON, UNITED STATES ARMY, ON THE SANTA MESA HOSPITAL, MANILA, P. I., MADE TO THE CHIEF SURGEON, DIVISION OF THE PHILIPPINES, JUNE 14, 1900.

This hospital is located at Santa Mesa, a suburb of Manila, and is distant about 3½ miles from division headquarters in the walled city. It is built on a small elevation, or mesa, about 600 yards from the Pasig River and at an elevation of about 60 feet above tide water. The buildings, which were originally intended for infantry barracks, although never used as such, were first occupied by the medical department on November 4, 1899, and the first patients were received November 10, 1899. The site is a good one, comprising as it does a peninsula or neck of land near the confluence of the San Juan and Pasig rivers, and having a decided slope on three sides which insures good surface drainage. The country is open for a considerable distance on either side and unobstructed by buildings on all sides. This with the elevation gives a full sweep to the prevailing southeast breeze and makes a difference in temperature between here and the city of from 4° to 5°, which is the difference in excessively hot weather between suffering and comparative comfort.

The buildings comprising the hospital are the so-called nipa structures common to the country, consisting of a bamboo framework thatched with the leaves of the nipa palm. They are raised from 2½ to 5 feet from the ground, depending on the slope, and the eaves project 6¾ feet beyond the front walls, forming a covered veranda of that width. The walls and partitions are 8 feet in height and do not reach within several feet of the roof at the nearest point in front, thereby permitting of the most perfect ventilation, the projecting eaves preventing the entrance of rain. As a matter of fact the occupants are virtually living in the open air sheltered from sun and rain. This makes a building which is nearly ideal for hospital purposes in this country.

The hospital is laid out in quadrangular form, the quarters for the female nurses and three wards forming one side, the administration building, quarters for noncommissioned officers, barracks for the men, and two wards forming the other side, while the officers' quarters and storehouses are at the north and south ends, respectively. Four new wards recently constructed are built at right angles to the wards on the east side so that the kitchens and dining rooms of the old wards, which are ample in size, may be utilized for the new wards as well. These wards are not yet equipped. The building used as a laboratory, operating room, and dispensary is within and south of the center of the quadrangle and the guardhouse is at the extreme south end. Barracks for 100 men and 4 officers will be constructed shortly southeast of the hospital, for the use of the company of infantry now on duty here as guard.

The capacity of the hospital is 920 beds—5 wards of 120 beds each and 4 of 80 beds each. The personnel consists at present of 5 commissioned medical officers, 5 acting assistant surgeons, 4 hospital stewards, 2 acting hospital stewards, 122 privates of the Hospital Corps, 25 female nurses, and 64 civilian employees. The last consist of 34 Chinese cooks and dining-room boys, 2 Filipino carpenters, 24 Chinese scavengers, 4 ambulance drivers, and 2 Filipino seamstresses.

An ambulance train of seven ambulances and the necessary wagons for transportation of supplies form a part of the equipment of the hospital.

The dietary for the sick, under the allowance of 40 cents for each patient per day, as supplied by the subsistence department, has been ample and satisfactory.

The work of the laboratory, on account of lack of space, is carried on in a room in the same building with the dispensary and operating room. It is wholly inadequate, and the equipment is by no means complete. Plans and estimates of a building for a modern laboratory and operating room combined, which met with the approval of the chief surgeon, have been forwarded. It is to be hoped that this building will be erected at an early date. Requisitions to complete the laboratory both in the pathological and bacteriological departments have been forwarded, approved by the chief surgeon.

The work done in the laboratory, although the equipment as stated is incomplete, has been very satisfactory and has consisted of blood examination of all febrile cases, examination of sputa, stools, and other discharges, the examination and preparation of pathological specimens, and X-ray work.

The water supply is furnished from the mains of the city waterworks. It is ample in quantity and of good quality, but to insure against any possible infection all water used for drinking is boiled. The Waterhouse-Forbes apparatus will be introduced as soon as it can be supplied. Ice is supplied in a sufficient quantity from a private ice plant in the city.

A system of sewerage has just been completed for this hospital, the main sewer of which discharges into the Pasig River. In the rear of each ward are the bathrooms and closets. The method of disposal of excreta in use at present is that of the dry-earth closet. These closets are emptied and thoroughly cleaned twice daily by men employed by the quartermaster's department, and the means employed are as unobjectionable as this method will admit of. The dry-earth closets will be replaced shortly by a system of water-closets with sewer connections. In each bathroom eight showers are available for the advanced convalescents; all others are bathed in the wards. The ward officers are charged with the enforcement of the bathing regulations.

The total number of cases admitted since the opening of the hospital is 3,110, of which 2,178 were returned to duty; 8 were discharged from the service, 7 for disability and 1 at expiration of term of service; 410 were transferred to other hospitals; 28 otherwise disposed of, and 30 died.

Of the total number of diseases treated a large majority were of malarial and intestinal origin, 1,129 cases of malarial fever being recorded, and 333 and 288 of diarrhea and dysentery, respectively.

There were 49 cases of typhoid fever admitted, and when admissions from this disease on these islands is compared with the admissions for the same cause in the home camps and in Cuba and Porto Rico during the Spanish-American war, the comparative immunity from this disease here is notable.

The malarial fevers were almost wholly of the æstivo autumnal variety, although for the most part not of a pernicious type. A profound degree of anæmia, however, followed in many instances, which was very rebellious to treatment, and many patients were invalided home from this cause.

Of the cases of dysentery treated here about 50 per cent were of the amœbic variety, as shown by microscopical examination of the stools. As many of the patients had received treatment for varying lengths of time at base or other hospitals, this estimate is probably too conservative. Another interesting fact is that the amœbic seemed to be more amenable to treatment than the nonamœbic variety. The acute symptoms in most cases responded promptly to the ipecacuanha treatment, 3 to 4 grams, regardless of variety, and with rest in bed and carefully restricted diet many of these cases progressed uninterruptedly to recovery. The majority of the cases admitted, however, were subacute or chronic in character. Blood examinations in nearly all of these cases showed the presence of the æstivo autumnal malaria parasite, generally of the hyaline variety, and the administration of quinine was an important part of the treatment.

The diarrheas admitted did not differ materially from the camp diarrhea seen elsewhere, and were, as a rule, due to the usual causes. A noteworthy fact was the large number of patients admitted for diarrheal disorders who had defective teeth. Even sound teeth seem to deteriorate very rapidly in this climate, and the necessity for a rigid examination of men suffering from defects of this nature who are enlisted for service here and the further necessity for competent dentists to attend to the teeth of the men is obvious.

The amount of surgical work done at this hospital has not been very extensive, owing to the more easy access of the cases coming from the front by rail or boat to the hospitals in the city, and furthermore to the fact that the operations of the troops in the field since the establishment of this hospital have not been as extensive as formerly.

In conclusion, I would like to invite attention to the conscientious and painstaking work done by all connected with the hospital, including the medical staff, the hospital corps detachment, and the female nurses. All worked harmoniously and unremittingly for the common end—the welfare of the sick.

### REPORT ON THE CONVALESCENT HOSPITAL, CORREGIDOR ISLAND, MADE JUNE 1, 1900, TO THE CHIEF SURGEON, DIVISION OF THE PHILIPPINES, BY MAJ. W. W. GRAY, SURGEON, UNITED STATES ARMY, COMMANDING HOSPITAL.

Corregidor Island lies across the entrance of Manila Bay from the China Sea, distance 26 miles from the city of Manila. The island is 3 miles long and from one-fourth to three-fourths of a mile wide. The greater part of it rises abruptly from the water, reaching an extreme elevation of 550 feet above the sea. Several plateaus of different sizes are found on the higher points of the island. The hospital is situated on the shore of a small inlet or bay on the north side of the island, and about midway of it.

The hospital was established by Maj. W. O. Owen, brigade surgeon, United States Volunteers, November 25, 1898, and consisted at first of tents and several old Spanish buildings, with a capacity of 250 beds. In the summer of 1899, while under the command of First Lieut. Henry Page, assistant surgeon, United States Army, plans were drawn and contracts let for the present hospital. The first of the new buildings was occupied September 18, 1899. The present hospital has a capacity of 220 beds, and consists of the following buildings:

(1) Ward A, a one-story L-shaped structure, 92 by 92 by 12 feet; capacity, 100 beds.
(2) Ward B, a one-story rectangular structure, 62 by 28 by 12 feet; capacity, 20 beds.
(3) Ward C, a one-story L-shaped structure, 91 by 68 by 12 feet; capacity, 80 beds.
(4) Officers' ward, a one-story rectangular structure, 68 by 28 by 12 feet; capacity, 20 beds.

These four pavilions are constructed of wood, with corrugated iron roofing, elevated about 3 feet from the ground. Sliding windows encircle the buildings and permit the wards to be practically thrown open to the outside air, giving the most complete ventilation. This is a great advantage in this climate, and permits the air space per man to be reduced. Only at rare intervals is it necessary to close the windows, and then for a short time during driving wind and rain storms. Covered porches 5 feet wide extend around the buildings.

The administration building is 50 feet square and two stories in height. The lower story is used as offices; the upper as a dormitory for the detachment of the hospital corps. This building is constructed of wood, with metal roof, and on the general plan of the pavilions. All the buildings are painted white inside and out, with green trimmings, and present a very neat appearance. Storerooms, dispensary, and operating rooms are located in two adobe buildings constructed by the Spaniards. They have been recalcimined and painted, and answer very well the purposes for which they are used. Temporary nipa buildings have been used for the kitchens, but a large and commodious dining hall and kitchen is under construction, and will be completed in a short time. The medical staff are quartered in a structure built by the Spaniards, and formerly used (I believe) by the Spanish officers stationed here. It is adobe in structure, with nipa roof. It consists of three good-sized bedrooms and two smaller ones, besides sitting and dining rooms; all on one floor. These comprise the principal buildings on the grounds of the hospital. Plans have been drawn and approved for the construction of additional wards, which will double the present capacity of the hospital, but as the rainy season is so near at hand they will not be completed before fall.

The site of the hospital slopes gradually back from the bay, rising rather abruptly to 50 or 60 feet above sea level at the officers' ward. The buildings are somewhat irregularly located, due to the site; a main street runs east and west through the grounds, with several streets north and south. The natural drainage is good; open drains carry the surface water to the bay; no closed sewers are used. All excreta, garbage, and débris of every kind is collected daily and carried in open boats out to the sea about half a mile from the shore and dumped into water 50 or 60 feet deep. By this method, under the immediate charge of a noncommissioned officer, the buildings and grounds are kept in thoroughly sanitary condition.

At present tents with dry-earth latrines are used. These are satisfactory during the dry season; but plans have been drawn and approved for comfortable closets and bathrooms. Movable bath tubs are used for the wards. A series of shower baths for those able to walk are located a few yards to the side of one of the main wards.

A reservoir constructed about three-fourths of a mile distant from and 100 feet above the site of the hospital collects water from a small stream. This water is conveyed in pipes to and through the grounds, and is used for the general purposes of the hospital. It has thus far proved sufficient in quantity, although no rain has fallen for nearly six months. A small condensing plant furnishes pure and wholesome water for drinking. Ice is purchased in Manila. A small ice plant would add much to the comfort and convenience of the hospital and permit the keeping of a larger supply of meat during the stormy season, when it is not always practicable for a launch to visit the island daily.

A small bakery operated by members of the hospital corps furnishes excellent bread to the hospital. The supplies furnished by the commissary department have, as a rule, been of excellent quality. Chickens, eggs, and other articles of diet not directly obtained from the commissary have been purchased partly in Manila and partly from natives residing on Corregidor Island and contiguous territory. The lack of good fresh cow's milk has been a great deprivation, but it is impossible to obtain it in quantity in the islands. The medical purveying department in Manila has furnished, with few exceptions, all medicines and supplies asked for on approved requisitions. A steam launch makes daily trips, except Sundays, between Manila and Corregidor Island, carrying patients, mail, and supplies. Telegraphic communication with Manila is had by cable to Naic and telegraphic line from Naic to Manila on the main shore.

The personnel of the hospital at the present time consists of 1 major and surgeon, United States Army, 3 acting assistant surgeons, 2 hospital stewards, 3 acting hospital stewards, 52 privates of the hospital corps, and 8 female contract nurses, with 4 Chinese cooks, 3 Chinese helpers, and 10 Filipinos employed as scavengers.

Corregidor Island in some respects is almost an ideal place for a convalescent hospital in the Philippine Islands. It enjoys a remarkably equable climate, a mild sea air, with breezes blowing the greater part of the day; no local deleterious or insanitary conditions; good natural drainage; an easily procured water supply; fine sea bathing. After a personal experience of nine months and the records for eighteen months, my observations upon the local and climatic influence of the place in the treatment of disease is as follows: Acute and chronic dysentery and acute and chronic diarrhea have done perhaps as well here as in any other place in the islands, but no special advantage can be claimed. Subacute and chronic rheumatism have not done well. Cases of incipient or advanced tuberculosis have not improved. Convalescents from the various types of malarial fever, including the anæmias and cachexias, have in a large percentage of cases improved in a marked degree. Convalescents from typhoid and dengue fever have done well. Mild types of sunstroke and heat exhaustion have been much benefited. Cases of climatic debility, brought on by hard and exhausting service in the field, have been restored to normal conditions of health in a short time. This fact is shown in the troops which have been sent here from the field as a guard to the hospital. I would suggest that it might be a good plan to encamp here from time to time troops who require rest and restoration after a campaign in the field.

The following is a brief synopsis of the patients admitted to the hospital from December 1, 1898, to June, 1900: Total number treated, 2,712; returned to duty, 1,946; transferred to United States and other hospitals, 587; died, 28; remaining in hospital, 151.

Of the more important diseases there have been received: Dysentery, acute and chronic, 297; diarrhea, acute and chronic, 310; gastritis, acute and chronic, 79; malarial fever, various types, 630; typhoid fever, 96; rheumatism, acute and chronic, 115; tuberculosis, 6; anæmias and cachexias, 111; and gunshot wounds, 105.

A large majority of the cases have been in various stages of convalescence; others in chronic type of the disease, subject to relapses. Acute cases have been received from the troops stationed on the island and also from the post of Marivales, across the bay.

The medical staff have done faithful and conscientious service.

The female nurses have performed excellent service at this hospital. They have been attentive to their duties, and by their cheerful and kindly manner materially aided in the care of the sick.

The detachment of the hospital corps, with some exceptions, have performed their various duties in a cheerful, conscientious, and intelligent manner.

## DEPARTMENT OF NORTHERN LUZON.

### REPORT OF MAJ. L. M. MAUS, SURGEON, UNITED STATES ARMY, CHIEF SURGEON, SECOND DIVISION, EIGHTH ARMY CORPS, AND OF THE DEPARTMENT OF NORTHERN LUZON, MADE TO THE CHIEF SURGEON, DIVISION OF THE PHILIPPINES, JUNE 15, 1900.

In compliance with your letter of April 12, 1900, I have the honor to submit herewith my report as chief surgeon, Second Division, Eighth Army Corps, and the Department of Northern Luzon, from December 21, 1899, until assigned to the duties of medical and sanitary inspector, Division of the Philippines, June 8, 1900.

I arrived in Manila December 19, 1899, having sailed from San Francisco on the United States transport *Hancock* the 21st of the preceding month. At date of joining—December 27—the headquarters of the Second Division were located in Bautista, province of Pangasinan, a small nipa pueblo 100 miles north of Manila, on the line of the Manila and Dagupan Railroad. General McArthur, commanding the division, had but a few weeks previously reached this point, during the campaign from Angeles North, and temporarily taken possession of a large frame building constructed by an English company for commercial purposes. Not only did the commanding general and staff live, mess, and have their offices in this building, but the clerical force of the headquarters as well.

### COMMAND AND ORGANIZATION OF TROOPS.

*Command.*—The division contained 6 troops of the Fourth Cavalry, 3 batteries of the Third Artillery, and 13 regiments of regular and volunteer infantry, besides 5 companies of Macabebe scouts, with an aggregate strength of 17,766 officers and men.

The troops occupied at this time 90 posts, and were stationed in the provinces of Bataan, Bulacan, Nueva Ecija, Pampanga, Pangasinan, Principe, Tarlac, and Zambales.

*Organization of troops.*—First Brigade, Col. E. H. Liscum, Ninth Infantry, commanding, consisted of the Ninth and Twelfth Regiments of United States Infantry.

Second Brigade, Brig. Gen. F. D. Grant commanding, consisted of 1 battery of the Third Artillery and the Thirty-second, Thirty-fifth, and Forty-first Regiments of Volunteer Infantry.

Third Brigade, Brig. Gen. Frederick Funston, United States Volunteers, commanding, contained 2 troops of the Fourth Cavalry, the Twenty-second and Twenty-fourth Regiments of United States Infantry, and the Thirty-fourth Regiment of Volunteer Infantry.

Fourth Brigade. This command was organized several weeks later, and placed under the command of Brig. Gen. J. T. Bell, United States Volunteers. Two troops of the Fourth Cavalry, the Thirteenth and Twenty-fifth Regiments of United States Infantry, and the Thirty-sixth Regiment of Volunteer Infantry were assigned to the brigade.

The detachment of United States Engineers, Macabebe scouts, and the Third United States Infantry remained unattached to brigades.

General Orders, No. 1, April 7, 1900, issued by the commanding general Division of the Philippines, by direction of the Secretary of War, organized the military divisions of the archipelago into departments. Hence the brigade and division organizations were abolished and the second division was merged into the Department of Northern Luzon, with a very considerable increase in troops and geographical area. The department was divided into 5 military districts, but later on the sixth district was added. At present the department contains an aggregate strength of 25,550 officers and men, scattered over 226 posts and stations, and embraces in its geographical area 21 provinces.

The following is the present distribution of troops in the department:

### FIRST DISTRICT.

[Brig. Gen. Samuel B. M. Young, United States Army.]

| Organizations. | Provinces. |
|---|---|
| Third United States Cavalry (8 troops) | Abra. |
| Thirty-third Infantry | Bantoc. |
| Thirty-fourth Infantry (4 companies) | Benguet. |
| Forty-eighth Infantry | Lepanto. |
| Native scouts (400) | Illocos Norte. |
| | Illocos Sur. |
| | Union. |

### SECOND DISTRICT.

[Col. Charles C. Hood, Sixteenth United States Infantry.]

| | |
|---|---|
| Sixteenth United States Infantry | Isabela. |
| Forty-ninth Infantry (8 companies) | Cagayan. |
| | Nueva Viscaya. |

### THIRD DISTRICT.

[Brig. Gen. J. F. Bell, United States Volunteers.]

| Organization. | Provinces. |
|---|---|
| Fourth United States Cavalry (4 troops) | Pangasinan. |
| Twelfth United States Infantry | Tarlac. |
| Thirteenth United States Infantry | Zambales. |
| Seventeenth United States Infantry | |
| Twenty-fifth United States Infantry (8 companies) | |
| Thirty-sixth Infantry | |

### FOURTH DISTRICT.

[Brig. Gen. Frederick Funston, United States Volunteers.]

| | |
|---|---|
| Fourth Cavalry (1 troop) | Nueva Ecija. |
| Twenty-second Infantry | Pampanga, part. |
| Twenty-fourth Infantry (8 companies) | |
| Thirty-fourth Infantry (8 companies) | |

### FIFTH DISTRICT.

[Brig. Gen. F. D. Grant, United States Volunteers.]

| | |
|---|---|
| Fourth Cavalry (1 troop) | Bataan. |
| First Artillery (1 battery) | Bulacan. |
| Third Infantry | Pampanga, part. |
| Thirty-second Infantry | |
| Thirty-fifth Infantry | |
| Forty-first Infantry | |

### SIXTH DISTRICT.

[Col. J. Miller Thompson, Forty-second Infantry.]

| | |
|---|---|
| Fourth Cavalry (1 troop) | Infanta. |
| Twenty-seventh Infantry | Manila, north of Pasig. |
| Forty-second Infantry (8 companies) | Morong. |

*Organization of the medical department of the division.*—Active operations against an organized enemy of considerable force had just been closed when I joined the division headquarters at Bautista, and the various regiments were scattered along the line of the Manila and Dagupan Railway as far north as the Gulf of Lingayen. As a matter of fact, I did not expect much in the way of medical organization and administration under these circumstances, owing to the frequent changes required during the recent campaign. Each brigade was supplied with a brigade surgeon, but his office duties were merely nominal. Since the medical department had practically been directed from Manila the changes which were occurring among medical officers and hospital corps personnel were rarely known in the office of the brigade surgeon or chief surgeon of the division until long after the orders were issued and the changes effected. The clerical force of the division surgeon's office at this time consisted of one acting hospital steward, and no records were kept worth mentioning. So far none of the official reports, such as monthly personal reports of medical officers, change of status, reports of sick and wounded, personnel of hospital corps, requisitions, etc., ever passed through the chief surgeon's office, and consequently he knew very little of what was transpiring in his division. All these reports and communications were sent direct to Manila by medical officers, in compliance with a circular order issued by the corps commander upon the recommendation of the chief surgeon of the corps. In like manner many of the special orders effecting changes of medical officers and hospital corps personnel within the division were issued in Manila, and not infrequently intermediate orders were issued by brigade or regimental headquarters affecting the status of these men several times before the corps orders were received. Owing to the irregular sources from which such orders emanated it became impossible for the division surgeon to keep either a roster of the medical officers or the hospital corps personnel, and hence the impossibility of making intelligent recommendations for the proper assignment of either officers or men. On the

28th of December I requested the chief surgeon of the corps to send me a roster of the medical officers on duty in the division, to which he replied that the information was so meager in his office that it was impossible to send anything like a correct list. At this time medical officers and the hospital corps personnel were subject to orders issued not only from Manila, but from brigade commanders, regimental commanders, detachment commanders, by other medical officers, and even at times by the authority of the medical officer himself, and it rarely occurred that an information slip or telegram was sent to the division surgeon announcing these changes. The division commander apparently did not feel authorized to issue orders effecting changes in the status of medical officers in his division on account of the control exercised in Manila, but was very anxious to have the matter properly adjusted. Colonel Greenleaf, the chief surgeon of the corps, recognized the impossibility of arranging these details from Manila and approved of the plan of turning the matter over to the division commander.

*Duties of brigade surgeons.*—In order to define the functions and prerogatives of brigade surgeons I issued, January 10, 1900, the following circular to them and sent a copy to each medical officer in the division:

"I. Brigade surgeons will keep a roster of medical officers, hospital stewards, acting hospital stewards, privates of the hospital corps, nurses, or other employees of the medical department on duty in their respective brigades.

"II. They will keep the chief surgeon of the division informed by telegraph of any changes affecting the status of medical officers or hospital corps personnel without delay, which information will be transmitted to brigade surgeons by regimental or camp surgeons as soon as such changes occur.

"III. The following reports, etc., will be transmitted to the chief surgeon of the division through the office of the brigade surgeon, viz:

"1. Daily consolidated brigade report of number of sick in quarters, hospital, or absent. When reports can not be obtained for each company in the regiment companies missing should be designated.

"2. Weekly inspection report.

"3. Weekly sick report.

"4. Monthly report of sick and wounded.

"5. Personnel of hospital corps.

"6. Statement of hospital fund.

"7. Monthly report of medical officers, information slips.

"8. List of killed and wounded.

"9. Requisitions for medical and hospital supplies.

"10. Information slips containing all changes in the status of medical officers and personnel of hospital corps.

"11. Telegraphic reports of all deaths belonging to the commands within the brigade.

"12. The monthly sanitary report required by regulations should be referred to the brigade surgeon for his information and action.

"IV. Brigade surgeons are expected to make frequent visits to posts and stations within the limits of their brigades for the purpose of inspection, and will make careful inquiries into the administration of regimental and camp hospitals, treatment of the sick, messing, sanitation, medical and hospital supplies, reports, efficiency of medical officers, personnel of hospital corps, and such other matters as may come under their supervision. Frequent reports with recommendations are desired.

"V. All changes in the duties of medical officers and hospital corps personnel serving in the brigade will be made upon the recommendation of the brigade surgeon, with the approval of the chief surgeon of the division. Where such changes are urgent and the exigencies of the service do not admit of delay, brigade surgeons are authorized to take action at once with the brigade commanders, and report the fact as soon thereafter as practicable.

"VI. Requisitions will be prepared by the regimental surgeons for the entire regiments when practicable and forwarded to the chief surgeon of the division through the brigade surgeons. When necessity demands it, requisitions will be made by wire through the brigade surgeons. Regimental surgeons as a rule should not make requisitions for ordinary medical and hospital supplies oftener than once quarterly."

Owing to frequent changes in the stations of medical officers by brigade, regimental, and post commanders, I requested the division commander to issue an order directing that such changes be only made with the approval of the division commander. Telegraphic instructions were sent to brigade commanders on this subject on January 15, but in spite of these orders changes continued to be made without proper authority. On January 26 an order was issued by the division commander which, except in cases of emergency, limited all changes affecting medical officers and hospital corps personnel to division headquarters.

Regimental and post commanders were in the habit of granting leaves of absence to medical officers for the purpose of visiting Manila, and not infrequently officers granting such leaves would immediately make a requisition on the division commander for another medical officer. Owing to the scarcity of surgeons this practice became so frequent that it became necessary to submit the subject to the division commander, who issued the following order:

"The practice of medical officers leaving their stations without informing the chief surgeon having embarrassed the medical administration of the division, such officers will not in future leave their stations, except on duty, without authority from these headquarters."

With the organization of the department came a large increase in territory and troops. By the time this reorganization had occurred the district surgeons had become fairly well acquainted with their administration duties and were in a position to take entire control of the hospital corps of their respective districts. A letter was written to the department commander, recommending that an order be issued to the effect that all changes of this personnel be made by district commanders on the recommendation of district surgeons. The following order was issued on the subject:

"Upon recommendation of the chief surgeon of the department changes affecting stations of medical officers will only be made by authority of department commander. When the case is urgent and the exigencies of the service do not admit of delay such changes may be made by district, regimental, or post commanders, and the facts reported to these headquarters as soon as possible. It is believed that such urgency orders will not be necessary with troops located at points where telegraphic communications may be had. Orders directing changes in stations of members of the hospital corps within each military district will in future be made by district commanders on the recommendation of the chief surgeon of the district. Since the chief surgeon of the department is held responsible for the proper administration of the medical service of this command, district surgeons are directed to notify him immediately after such changes are made."

This transfer of authority has worked greatly to the advantage of medical administration. It was considered advisable, however, to retain control over the assignments of medical officers in the department.

*Regimental surgeons.*—Three regimental surgeons, one surgeon with the rank of major, one assistant surgeon with the rank of captain, and one assistant surgeon with the rank of first lieutenant, were included in the organization of each volunteer regiment, but curiously enough, in spite of his rank, the captain was only allowed the pay of the first lieutenant. About one-half of the surgeons of the volunteer regiments were selected from the ranking assistant surgeons of the Regular Army. The same regimental organization was applied to the regular regiments in the division except that the regimental surgeons were taken from the junior assistant surgeons of the Army, and in many instances from the acting assistant surgeons. The colonels and other officers of the regular regiments made frequent complaints as to the invidious distinction of selection of medical officers for regular and volunteers. In accordance with instructions received from the chief surgeon of the corps, the regimental surgeon was directed to make out the monthly report of sick and wounded for the entire regiment, the personnel of the hospital corps, muster rolls for the entire regimental detachment, supply hospital and medical supplies, carry all the hospital property on his papers, etc., which was an impossibility in the majority of cases separated and detached, as most of the companies in each regiment were. Very soon the allowance of regimental surgeons for each regiment became inadequate, owing to the number of posts garrisoned and their distance apart. In a number of instances medical officers had to attend from three to four different stations, varying from 4 to 10 miles apart, and owing to the hostile condition of the country it became necessary for them to take a guard, or run the risk of being shot or boloed. The scarcity of medical officers made the medical administration difficult and unsatisfactory, and resulted in many complaints from line officers. As it was impossible to obtain a sufficient number of surgeons, it became necessary to assign intelligent noncommissioned officers or privates of the hospital corps to these stations. In one instance seven medical officers were assigned to one regiment and still others were needed with it. A very large proportion of the medical officers serving in the division were acting assistant surgeons who evidently had come over for the novelty of the trip. Many of them became tired of their contracts and under various pretexts sought to be sent home. A number became unfit for duty on account of sickness and had to be returned to the States. One acting assistant surgeon, finding that he could not get away honorably, deserted the service. I refer to Dr. Roger T. Atkinson, who was stationed at Abucay. The majority of the medical officers on duty in the division were young and inexperienced. This remark applies to the acting assistant surgeons as well as those belonging to the volunteers and regular corps. I think the service suffered very much on this account. After regiments had become broken up into eight or a dozen posts it practically became impossible for the regimental surgeon to carry out instructions in regard to monthly reports, etc., for the entire regiment. The following circular was therefore issued February 6, 1900:

"I. Regimental surgeons are no longer required to submit the monthly report of sick and wounded for the entire regiment when companies are serving at different stations. The senior medical officer at each station will submit this report in accordance with existing regulations from the Surgeon-General's Office as printed on inside cover of register for patients. This report will be forwarded direct through the brigade surgeon to this office not later than the 5th of each month. Brigade surgeons will see that they are properly corrected before being transmitted. Reports for regulars and volunteers to be made out separately.

"II. Reports from troops where no medical officer is serving will be prepared by the medical officer having indirect charge. Hospital stewards, acting hospital stewards, or privates having charge of such stations should be provided with blank books for making out the daily sick report, and instructed as far as possible in the detail of preparing the necessary data for the medical officer responsible for the report.

"III. The reports of personnel of the hospital corps will also be prepared and forwarded from each station, where medical officers are serving, direct to this office through brigade surgeons. At stations where no medical officers are serving this report will be made out and forwarded by the medical officer having indirect charge of the station.

"IV. Brigade surgeons will also submit the monthly report of sick and wounded for headquarters of brigade and personnel report for members of the hospital corps serving in their office."

Instructions were also given regimental surgeons in regard to muster rolls for their detachments, and they were authorized to have rolls prepared for each station if deemed advisable. The regimental surgeon was required by a circular issued from corps headquarters to carry all the nonexpendable property issued for use of his regiment on his returns. The complications arising from this ruling frequently led to much dissatisfaction and seemed to a certain extent unjust. In many instances the regimental surgeon had to take up property he had never seen and to account for it, although it had been stolen, lost, or destroyed while not in his possession. In the organization of the various camp hospitals, equipment was sent direct from the supply depot without passing through the hands of the regimental surgeon. After a thorough study, both in garrison and field, I have become thoroughly satisfied that the regimental system of medical officers, generally speaking, is a failure. Whether he serves with volunteers or regulars, the medical officer should belong to the general medical staff, and be so situated that he could be relieved and sent elsewhere should the occasion require it. This should also apply to the hospital corps detachment attached to a regiment. Under the ruling the hospital corps detachment attached to a regiment is supposed to belong to it for the time being and follow the regiment under all circumstances. The constant changes in the personnel of camp hospitals, as a result of this system, worked to the detriment of the medical administration and the care of the sick. During the changes, which were frequently occurring among troops, companies leaving pueblos and replaced by others of different regiments would not only rob the camp hospitals of the personnel, but also dismantle them and carry off all the supplies and equipment. In order to break up this system, I requested the department commander to issue an order to the effect that during such changes the hospital personnel and equipment be left undisturbed, except when authorized to do otherwise by instructions from department headquarters.

*Regimental and camp hospitals.*—In addition to the regimental hospital organized at the headquarters of the regiment, it became necessary to organize a small hospital for the use of each separate station, except in the case of very small detachments. Medical officers were directed to organize such temporary hospitals in nipa houses or other buildings conveniently located, after a thorough cleansing and disinfection. From 5 to 10 field cots were issued for this purpose, and in many instances these hospitals were equipped with native beds and furniture. In every pueblo suitable buildings were found large enough to accommodate 50 beds if necessary. For all patients in such hospitals a gratuity of 30 cents, Mexican, was allowed from the civil fund in addition to the ration. Medical officers were directed to transfer all serious cases from the regimental and camp hospitals to the permanent field and base hospitals established within the division. Typhoid and malarial fevers, chronic dysentery, chronic diarrhea, and surgical cases requiring special skill were included in this list. Before these camp hospitals were established a large number of all the cases appearing on sick report were sent to the division hospitals or to Manila, and, consequently, many of these large hospitals were overcrowded with mild cases. These camp hospitals also reduced very greatly the percentage of sickness in the division. A large number of the cases were really not serious enough for transfer to the permanent hospitals, a rest of a few days in camp hospitals on a proper diet being all that was necessary in such cases. It is believed that men sent to Manila, or the permanent hospitals, remained on sick report much longer than necessary in many instances, and in this way kept up the percentage of sick.

*Field and base hospitals.*—The division hospital was established in the cathedral at Angeles by First Lieut. P. C. Fauntleroy, assistant surgeon, United States Army, September 29, 1899, and has a capacity of 260 beds. The main floor of the church is divided into four aisles, each of which has been converted into a ward. This hospital receives patients from troops stationed south of Angeles, and generally contains from 140 to 160 cases. The pueblo of Angeles is located in a sandy country about 90 feet above the level of the sea and is regarded as a very healthy section of the country. It is located on the railroad running from Manila to Dagupan and is thus favorably situated for the transportation of the sick. The nursing in the hospital is entirely done by members of the hospital corps, which has proven as satisfactory as in other hospitals employing trained female nurses. Lieutenant Fauntleroy is a very capable and painstaking officer, and possesses a high order of executive ability. He deserves great credit for the successful manner in which he has administered this hospital. In addition to his duties with the division hospital, he also is medical supply officer of the department, the depot being located at present in Angeles. Since the department headquarters were removed to Manila, orders have been issued transferring the depot here.

*Base hospital, Dagupan.*—As a result of General Wheaton's expedition north and campaign through the province of Pangasinan, it became necessary to establish a base hospital at Dagupan. A large building constructed by the Dominican Friars and used for college purposes, was selected for this purpose. This building is located on a tongue of land surrounded on one side by an arm of the sea and the other by a series of salt beds flooded by the ocean and is admirably arranged for hospital purposes. It has a capacity for 375 patients, besides rooms for dispensary offices, stores, diet kitchens, and a large corridor for mess hall. The hospital was established during the month of December, 1899, but was not thoroughly equipped before the 1st of February, 1900. The locality of this hospital makes it a very valuable place for the treatment of malarial and intestinal affections.

*Brigade hospitals.*—In additon to the division and base hospitals, a hospital for the First Brigade had been established at Tarlac, and one for the Third Brigade at San Isidro. On joining the division I found the First Brigade hospital had degenerated into a regimental hospital for the Ninth Infantry. On an inspection tour made to Tarlac, January 2, I found 49 patients in this hospital, 47 of whom belonged to the Ninth Infantry stationed in that and neighboring pueblos. This hospital was continued as the regimental hospital of the Ninth Infantry; the building which it occupied, the pueblo Presidencia, was well suited for hospital purposes, and was capable of accommodating 80 beds. The Third Brigade hospital at San Isidro, now officially known as the Fourth District hospital, occupies a large building in the center of the town and has a capacity of 75 beds. This hospital was originally established by General Lawton for the First Division during his expedition through Baliuag. At present it serves an excellent purpose for use of troops in San Isidro and those stationed in towns along the Rio Grande de Pampanga.

*Division supply depot.*—Until February requisitions for medical and hospital supplies were sent direct from regimental surgeons to the chief surgeon of the corps for issue from Manila. About this time so much work had accumulated on the hands of the supply officer in Manila that it became impossible to have requisitions filled with the necessary dispatch in cases of emergency. With the consent of Colonel Greenleaf, I established a medical supply depot for the division in the convent adjoining the division hospital at Angeles. Lieutenant Fauntleroy, the commanding officer of the hospital, was placed in charge. The building selected contained a number of rooms on the ground floor which rendered it specially suitable for depot purposes. Ample requisitions were made on the main depot in Manila, and from about the middle of February the medical officers of the division were supplied from Angeles. Regimental surgeons were directed to forward their requisitions for supplies for the entire regiment quarterly, except when it became necessary to submit specials; they were also authorized to use the wire when necessary. Regimental surgeons, when practicable, drew and issued supplies to the other posts of the regiment, and carried the nonexpendable property on their papers. Owing to the location of portions of the regiment this method could not be carried out, and the medical officers in charge of such troops were authorized to submit their own requisitions. Under these circumstances the medical officers drawing such supplies became responsible for them, it being impossible for the regimental surgeon to do so. On account of the press of work in the medical supply depot at Manila, the chief surgeon of the corps did not require medical officers receiving supplies to receipt for the expendable articles. This reduced the clerical work very materially. This same system was carried out in the division supply depot. Owing to the regimental system of receipting for medical supplies, Lieutenant Fauntleroy experienced considerable difficulty in obtaining receipts for supplies issued direct to medical officers serving with companies detached from regimental headquarters, and it became necessary to issue a circular on this subject. The medical officer receiving such property was required to send a memorandum receipt of it to the regimental surgeon, and in that way the matter was arranged. Since the department headquarters have been removed to Manila, steps have been taken to remove the department supply depot here also. Owing to the enormous seacoast occupied by troops of this department, and the water transportation necessary, Angeles is no longer a suitable place for this depot.

*Division ambulance company.*—An ambulance company had been organized for the division during the fall and before the command had begun its campaign north. This company was made up of 6 ambulances, a number of caraboa carts, litters, and a hospital personnel of 1 hospital steward, 2 acting stewards, and 40 privates. The company was under command of Acting Asst. Surg. A. B. Smith, and stationed at Tarlac when I joined the division. I understand it did excellent service in removing the sick and wounded along the line of march during the fall campaign. As there was no further use for such an organization, the troops being divided into one and two company garrisons, this company was disbanded early in January, the ambulances, personnel, etc., being assigned elsewhere.

*Buildings occupied by troops, camp sanitation, etc.*—Owing to the hostile condition of the country and the facilities offered for harboring insurrectos, ladrones, etc., the division commander decided to garrison all the principal pueblos in the limits of the division; hence each regiment was required to cover from six to twelve stations. The majority of the pueblos contain a church and convent, and this property as a rule was taken for the use of the troops, the friars having left the country during the insurrection. Private residences constructed of hard wood or nipa houses were occupied in towns where convents did not exist, and as a rule the troops were well and comfortably housed. A suitable building was also selected for the camp hospital. The sanitation of the towns was extremely bad when our troops entered them. The habitations of the natives as a rule were surrounded by filth of all kinds—slops, garbage, fecal accumulations, rubbish, and other débris. Weeds and rank vegetation were allowed to grow along the fences, in the yards, and in the streets. The native privy consists of a small bamboo house, erected about 5 feet from the ground and located in the yard, and connected with the main house by a bamboo bridge. The deposits as they drop are disposed of by the Filipino hog, the scavenger of the island, who usually remains around during the morning hours. Where this arrangement does not exist, the fecal matter is deposited amongst the weeds in the vicinity of the house. The slops and garbage as a rule were thrown to the hogs outside of the door or beneath the house through the open bamboo floor. Each family generally possesses a well, located near the kitchen door and not over 5 or 10 feet deep, the exception being to find them walled. Smallpox was prevalent in nearly every pueblo in the division, and it is questionable whether any house could be found which was not more or less infected. No attempt was made at isolation or disinfection by the natives, and the funerals of those dying of the disease were public in every sense from house to church and cemetery. Under these circumstances it became necessary to take unusual precautions with our troops. Stringent orders in regard to the boiling and filtering of drinking water, disposal of garbage and night soil were issued by the division commander. Post commanders were required to consult with the town presidents and counselors in regard to the sanitary conditions of the towns, and a great reformation was accomplished in this direction. As soon as possible the dry-earth system was introduced throughout the division, the closets being supplied by the quartermaster's department.

*Smallpox and public vaccination.*—Owing to the prevalence of this disease the following letter was written to the division commander, which resulted in an order for the public vaccination of natives within the limits of the division:

HEADQUARTERS SECOND DIVISION EIGHTH ARMY CORPS,
CHIEF SURGEON'S OFFICE,
*Bautista, P. I., February 30, 1900.*

SIR: I have the honor to state that smallpox is more or less prevalent in every town within the limits of this division, and not rare among our troops as a consequence. I do not believe it possible to stamp out this disease among our soldiers, in spite of the frequent and careful vaccinations practiced among them, until the natives are themselves protected. Owing to the continuous state of warfare that has existed on these islands for some years past, systematic vaccinations have been neglected among the natives, and hence the prevalency of this disease. Medical officers stationed in many of these towns report serious epidemics of this disease, and have been supplied with virus for use among natives in small quantities. While many officers are willing to perform this additional duty, not only for the protection of the men under their charge, but also from motives of humanity, it would seem wise for the military authorities to take this matter under consideration without delay. The natives in many instances are anxious for vaccination and frequently apply to medical officers along the line of railroad and also from interior towns. A systematic and compulsory system of vaccination should be required as far as it is possible within the territory now under our control. It is also believed that arrangements could be made to have these vaccinations performed all over the islands. When the work can not be performed under the direction of the medical officers, in towns where troops are stationed, the services of practicantes can be secured for from $15 to $25, Mexican, per month. The virus and expense of vaccination should be charged to the United States or to civil funds.

L. M. MAUS,
*Major and Surgeon, U. S. Army, Chief Surgeon.*

The ADJUTANT-GENERAL SECOND DIVISION, EIGHTH ARMY CORPS.

This communication received the hearty approval of General MacArthur, the division commander, and the chief surgeon of the corps. I was directed by the corps commander to institute as quickly as possible a system for the protection of the natives of the division, which was to be paid for out of the civil funds. Although our men had been frequently vaccinated, numerous cases of smallpox were reported from day to day among them, and not infrequently a number of deaths. It is my opinion that before the public vaccinations were instituted as many as forty or fifty cases of smallpox were being daily treated in the division among the troops, while in some of the towns the disease was practically epidemic among the natives and deaths very common. Circular letters of instruction were written to brigade surgeons, as well as to medical officers, in regard to the matter of procedure, etc. They were authorized to hire native vaccinators at $30 Mexican per month and inspectors at the rate of $40. No limit was placed on the number of vaccinators for each pueblo, this depending on the amount of work required. Virus was furnished in abundance on telegraphic requisitions to the board of health, Manila. The following circular was sent February 17, 1900, to all medical officers in the division:

"I. Medical officers on duty in this division are directed to superintend the vaccination of natives in towns where troops are stationed, and are also expected to exercise control over towns and barrios in their respective neighborhoods. They will confer with the city authorities in the regard to the selection of a suitable place for these vaccinations and best method for gathering the inhabitants together for this purpose. Medical officers are specially cautioned in regard to proper instructions for cleansing arms, instruments, and performing the operations. Soap, nailbrushes, bichloride tablets, gauze, and blank books should be provided vaccinators. These articles can be secured from Manila on properly prepared requisitions, the cost of which is defrayed by the civil fund. Before vaccination the arm should be thoroughly washed with soap and scrubbed with a nailbrush, afterwards rinsed in boiling water. In case an antiseptic solution is used, care should be observed that it is carefully washed off before the operation. The arm should be left uncovered at least thirty minutes after vaccination, until it becomes dry and glazed over. The process of vaccination of large numbers may be greatly facilitated by systematizing the work—that is, assigning a certain portion of the work to each individual; for instance, one for washing arms, a second for preparing the spot for vaccination, and a third for inserting the lymph. A fourth person should be employed for keeping the records of those vaccinated. A record of every case will be kept and records forwarded to this office after completion of work."

The vaccinators were paid on rolls forwarded to the division supply officer, who had charge of the disbursement of the civil funds for vaccination and purchase of drugs for indigent natives. In order to lend official sanction to this work and secure the cooperation of the commanding officers in the various pueblos, the following order was issued from division headquarters:

GENERAL ORDERS, } HEADQUARTERS SECOND DIVISION
No. 15. } EIGHTH ARMY CORPS,
*Bautista, P. I., February 17, 1900.*

1. The work of vaccinating the native population within the limits of this division being now in progress under the supervision of the chief surgeon, commanding officers

will cooperate with the medical department and render all assistance possible in the prosecution of the work.

By command of Major-General MacArthur:

BENJAMIN ALVORD,
*Assistant Adjutant-General.*

The work of public vaccinations was fairly started February 20 and was industriously pushed by the medical officers in charge. The board of health, Manila, usually kept an abundance of fresh virus on hand and responded promptly to requisitions for it. There was very little objection on the part of the natives, probably no more than would have occurred among the same number of Americans. The insurgents objected to these public vaccinations in several of the pueblos, manifesting their disapproval by kidnapping the vaccinators.

District surgeons are required to render a report of work done in their respective districts after the completion of the work. The work is still going on, but the following reports show what was accomplished in each district from February 20 until May 31.

The first and second districts were not attached to the division until it was merged into a department in April, and owing to the poor mail facilities and uncertain transportation of virus little was accomplished in these districts before I was relieved as chief surgeon. Much of the virus sent to them became inert before it reached its destination.

| | Third district. | Fourth district. | Fifth district. |
|---|---|---|---|
| Estimated population | 337,363 | 121,400 | 330,612 |
| Estimated number protected by smallpox | 171,788 | 25,718 | 78,069 |
| Estimated number protected by previous vaccinations | 13,853 | 12,177 | 109,112 |
| Children vaccinated | 62,609 | 19,224 | 31,173 |
| Adults vaccinated | 41,301 | 14,851 | 27,222 |
| Successful vaccinations | 72,291 | 15,055 | 20,216 |
| Total vaccinations | 114,051 | 34,075 | 58,253 |
| Number that require vaccination | 50,635 | 68,450 | 113,796 |
| Number of vaccinators employed | 127 | 31 | 68 |
| Number of units virus used | 152,700 | 31,000 | 42,000 |

*Hospital cars.*—As the army advanced north the Manila and Dagupan Railroad was rehabilitated, and proved invaluable not only for the transportation of troops and supplies, but for the sick and wounded of the division as well. Ordinary freight cars provided with mattresses, blankets, pillows, etc., were first utilized for this purpose, but upon proper representation to the corps commander authority was obtained to fit up two long freight cars for hospital purposes. The division hospital was located at Angeles, 50 miles north of Manila, and all patients south of that point were sent to the division hospital. The base hospital at Dagupan, 70 miles farther north, received all patients north of Angeles. The hospital cars were fitted up with eight superimposed woven-wire bottom berths, racks for medical and surgical supplies, ice box for preserving milk and other foods, and a water-closet. Each car was provided with one acting steward and two privates, one of whom was a supernumerary. These cars made daily trips between Manila and Dagupan and served a most useful purpose. The following letter was embodied in an order by the department commander and issued as hospital car regulations:

HEADQUARTERS SECOND DIVISION EIGHTH ARMY CORPS,
CHIEF SURGEON'S OFFICE,
*Bautista, P. I., April 18, 1900.*

SIR: In order to more properly organize the hospital railway service for this department, I have the honor to recommend that a circular letter of instruction embodying the following rules and regulations be published for the information and guidance of all concerned:

1. The railway service in connection with the transportation of the sick and wounded will be under charge of the chief surgeon of the department and subject to his instructions.

2. The personnel of each hospital car will consist of one acting hospital steward and two privates of the hospital corps, one of whom shall be a supernumerary. They will be attached to the department hospital at Angeles for muster, pay, clothing, etc., and will be carried on the rolls of that hospital. When relieved from temporary or permanent duty with the hospital car service they will report to the commanding officer there for duty.

3. The acting hospital steward, or senior private, present in charge will be held responsible for the proper administration of this service and the care of the sick during transfer to their destination. He will keep a daily report, in a blank book provided for this purpose, of every one transferred, stating name, rank, company, regiment, corps, diagnosis, and place of destination. Where casuals are transferred without transfer slips, the cause, as far as possible, will be noted in the report. A copy of this report of each day will be transmitted to the chief surgeon of the department.

4. A daily inspection of the hospital car service will be made by a medical officer belonging to the staff of the department hospital at Angeles, under the directions of the commanding officer. He will examine into the condition of the service, see that the medical supplies and equipment of each car are properly maintained, report necessary repairs to cars, and make such recommendations as may be necessary for changes in the personnel.

5. No person will be permitted to travel on the hospital cars except the attendants and the authorized sick. Officers or soldiers taken sick en route, or found along the line, should be transferred in hospital cars, though having no transfer slips. The name of any officer, soldier, or citizen violating this regulation will be reported to the chief surgeon of the department.

6. Except medical supplies in small quantities for emergency use, and ice for hospitals, no articles will be shipped in hospital cars.

L. M. MAUS,
*Major and Surgeon, U. S. Army, Chief Surgeon.*

The ADJUTANT-GENERAL, SECOND DIVISION EIGHTH ARMY CORPS.

*Public distribution of medicines to indigent natives—free dispensaries.*—As a result of the recent wars, a large proportion of the natives had become impoverished, run down in health, and greatly in need of medicines. Practically no practitioners of medicine could be found in the country, and very few drug stores. Pernicious malarial fever was not uncommon among them, and deaths from that cause not infrequent. The only quinine available in the country was that supplied to the troops. In the pueblo of Mexico, province of Pampanga, twelve natives died from pernicious malarial fever in one week. Fifty ounces of quinine were sent there for distribution in charge of a medical officer, and the medicine dispensed on the main plaza. The judicious use of this medicine, together with a thorough overhauling of the sanitary condition of the city, relieved the situation. The condition of the people in this respect was represented to the division commander, and $20,000 Mexican requested to purchase medicines for the indigent poor. The application was approved and the money was turned over to the division supply officer. A supply of quinine, vaseline, carbolic acid, gauze bandages, bismuth, etc., was sent to sixty-six pueblos, and by these means great good was accomplished.

*Prevailing diseases.*—Malarial fever and intestinal diseases comprise about 60 per cent of all the diseases occurring on the island of Luzon. The malarial parasite is probably responsible for at least one-half of all the sickness, while next in order are diarrhea and gastric disorders. Dysentery is also common, but not so frequent as diarrhea; perhaps 25 per cent of the dysenteries are of the amœbic variety. Dhobie itch (tinea circinata) is not as common as generally supposed. Smallpox is very common among the natives, and while quite fatal, appears not to be dreaded. I think that 50 per cent of the living population have had the disease. Leprosy is widely scattered over the archipelago, an estimate of 30,000 cases having been made on good statistical authority. Beriberi is frequent during the rainy season. Catarrhal diseases are also quite common, especially chronic inflammation of the nose, throat, and bronchial tubes. Pulmonary tuberculosis is also a widespread disease among the natives.

The large percentage of malarial fevers and intestinal diseases contracted by the troops was due to numerous "hikes" after insurrectos and ladrones under the most unfavorable hygienic conditions. While on these trips the men waded through swamps and flooded rice fields, drank water from all sources, ate poorly prepared food, and slept in wet clothes. They were also exposed at times to the sun's rays during the heat of the day. These conditions will in all probability not occur again, and if so, will be confined to only a small per cent of the troops, hence the general average of the mens' health should be better in the future. From my experience with troops that have been stationed here under favorable conditions, and with good hygienic surroundings, I am satisfied that a high standard of health can be maintained among them. During the acclimatizing process everyone is liable to lose his superfluous flesh, but that is rather an advantage. When proper barracks and living facilities are prepared in the Philippines for our troops and their duty is confined to garrison life, I feel quite sure that the sick rate will be no higher than at stations in the southern part of the United States.

*Rations.*—The Government ration as issued by the Subsistence Department appears to be adequate and well adapted for the needs of our troops in the Tropics. Much has been written on this subject, and by many of these theoretical writers a dietary prescribed similar to that in use by the inhabitants of the country. In the discussion of this question several important factors must be considered. First, that the physical condition of the American soldier differs in every respect from that of the Filipino, Cuban, or Porto Rican, and consequently his physical wants are equally different. Four centuries have cultivated a taste in the Filipino for rice and the omnipresent mud fish; time has so molded the palate of the Mexican that he craves and digests with ease tortillas, frijoles, and chili, while the Cubans and Porto Ricans are wedded to their food—yams, rice, etc. The stomachs of these various races are accustomed to the food they have received for generations and readily take care of it. Put an American on the diet of any of these tropical countries, and in less than a week his stomach will be gone. Our ration is excellent and in the main should be left undisturbed. Some slight changes might be made in regard to the reduction of the fats and increase of the saccharin element. The fresh beef and mutton sent here as a rule comes from Australia, and is issued to the troops in the interior hundreds of miles from Manila in a semifrozen condition. It is always received in an excellent condition and is of a fine quality. Cocoa, chocolate, and tea are adapted to the Tropics, and the men crave sweets, such as jams, preserves, dried fruit, and candy. Sugar promotes health if taken in reasonable quantities, and creates vital energy. Great stress should be laid on the preparation of food, and each company should be supplied with two accomplished cooks.

*Clothing for the troops in the Tropics.*—As the change in temperature during the year undergoes slight variation, no change in weight or texture should be made in the clothing for the different seasons. The material employed in the manufacture of the blouse, trousers, and underwear should consist of cotton, linen, or a mixture of the two, and of a light texture. Lightness, strength, durability, and color are the four requisites in the manufacture of a uniform for the Tropics. Woolen garments, pure or mixed, may be regarded as unnecessary in a climate where the temperature rarely goes lower than 75° F. during the coldest season of the year. Wool is rarely worn here either by natives or acclimated foreigners. The khaki cloth issued by the Quartermaster's Department is too heavy and dense for comfort. It is woven into a heavy drilling which entirely precludes the passage of air. The felt hat is also too heavy for comfort and should be superseded by straw. The drab felt hat, as now manufactured, retains too much heat and prevents the necessary circulation of air around the temples. Canvas-top shoes, with leather soles and heels, would be an improvement over the leather in the dry season. Rubber boots would be serviceable for guards, etc., during the rainy season, and a mackintosh in place of a poncho. A reform in the color of the tropical uniform is one of the most desired changes. A composite shade of green would be infinitely better in every respect. This color, from a military standpoint, is superior to the khaki of the English, which we have adopted, or the blue and white of the Spaniards. Such a shade of green would absorb less heat and would certainly be less conspicuous on the firing line. The shade desired is obtained by blending green with a russet brown. The material might be woven of an alternate green and russet brown thread, or a composite shade made up by a blend of the two. The entire islands are covered with a dense vegetation at all seasons of the year, consisting of palms, bamboo, banana shrubs, grass, and dense hedges with every variety of green shades. Protective mimicry in nature among birds and animals is so well known by natural historians that it is scarcely necessary to discuss it here, but a valuable suggestion lies behind this truth, which if acted upon would no doubt work to the material advantage, comfort, and safety of our troops. In addition to the natural advantages already mentioned in connection with this subject, it would not be amiss to state that such a shade of green would prove exceedingly handsome and agreeable to the eye, and by its adoption would possess the sentimental attractiveness of being a national uniform color, which the khaki can never possess, from the fact that it is essentially English, and should be left to their quiet and undisturbed possession.

*Monthly medical reports, clerical work, etc.*—Great difficulty was experienced in securing the monthly official reports on account of the inexperience of medical officers and the scarcity of experienced hospital and acting stewards. Very little was expected of these officers under the circumstances, and the tardy appearance of the incorrect reports which were finally received caused no surprise in my office. Except in the case of one officer, every report of sick and wounded had to be returned for corrections. It became impossible for the regimental surgeons to render a report for the entire regiment on account of the widely separated companies. Each camp surgeon was required to render the monthly report for the troops he attended, and as he in numerous cases had charge of three or four stations, some of which he could not visit oftener than once a week, he had to make up some of these reports from data and information furnished by the hospital private in charge. The following is a copy of the usual daily report furnished the department commander, a copy of which was also sent to the corps surgeon:

*Daily field report of sick and wounded, Department of Northern Luzon.*

| Organization. | Strength reported. | In quarters. | In hospital. | Absent. |
|---|---|---|---|---|
| Engineer Corps | Detachment | (1) | (1) | (1) |
| Third Cavalry | 8 troops | 42 | 38 | 4 |
| Fourth Cavalry | 6 troops | 30 | 17 | 62 |
| First Artillery | 1 battery | 3 | 0 | 15 |
| Third Infantry | Regiment | 40 | 20 | 51 |
| Ninth Infantry | do | 41 | 14 | 138 |
| Twelfth Infantry | do | 33 | 24 | 105 |
| Thirteenth Infantry | do | 30 | 23 | 95 |
| Sixteenth Infantry | do | 40 | 66 | 54 |
| Seventeenth Infantry | do | 26 | 23 | 104 |
| Twenty-second Infantry | do | 48 | 10 | 101 |
| Twenty-fourth Infantry | 4 companies | 16 | 10 | 22 |
| Twenty-fifth Infantry | Regiment | 26 | 25 | 43 |
| Twenty-seventh Infantry | do | 56 | 21 | 66 |
| Twenty-ninth Infantry | 5 companies | 16 | 0 | 73 |
| Thirty-second Infantry | Regiment | 30 | 20 | 83 |
| Thirty-third Infantry | do | 34 | 61 | 13 |
| Thirty-fourth Infantry | 8 companies | 28 | 22 | 12 |
| Thirty-fifth Infantry | Regiment | 26 | 40 | 51 |
| Thirty-sixth Infantry | do | 24 | 34 | 24 |
| Forty-first Infantry | do | 34 | 42 | 31 |
| Forty-second Infantry | do | 19 | 7 | 114 |
| Forty-eighth Infantry | 1 company | 5 | 10 | 7 |
| Forty-ninth Infantry | 3 companies | 8 | 10 | 0 |
| Macabebe scouts | | 5 | 0 | 1 |
| Native scouts | | 5 | 6 | 3 |
| Burr's scouts | | 1 | 3 | 0 |
| Total | | 666 | 546 | 1,272 |

[1] No report received.

| | |
|---|---|
| Department field hospital, Angeles | 134 |
| Department base hospital, Dagupan | 264 |
| Fourth district field hospital, San Isidro | 54 |
| | 452 |

Deaths: Private Clarence Quillion, Company E, Thirty-fifth Infantry, gunshot wound, abdomen. Private Lewis F. King, Company E, Thirteenth Infantry, sunstroke.

*Special mention of medical officers and members of the hospital corps for gallantry during action or for meritorious service.*—I have no special official information concerning the gallant conduct of many of the medical officers of the division during the preceding summer and fall. Many of them were present during numerous sharp engagements and performed conspicuously gallant service in the relief of the wounded on the firing line. I understand that these officers have been specially mentioned by their respective commanding officers. Maj. Franklin A. Meacham, surgeon, United States Volunteers, deserves special mention for the zeal, energy, and ability displayed in the administration of his brigade and district. First Lieut. P. C. Fauntleroy, assistant surgeon, United States Army, deserves great credit for the successful administration of the Second Division Hospital and supply depot. The following letter was received from Maj. G. W. Penrose, brigade surgeon, United States Volunteers, in regard to Acting Assistant Surgeon Reifsnyder, dated January 18, 1900:

"I have the honor to make the following report: As I wired you yesterday, Acting Assistant Surgeon Reifsnyder reported here with 49 sick of the Twenty-second Infantry en route to San Fernando. This officer has been steadily in the field since last October, he has been cut off from all supplies, has had to subsist his sick on the country and trust to native leaves and roots for medicines. All his sick had to be carried in hammocks by natives. In spite of every difficulty he brought them through in splendid shape. Most all of the men will be ready for duty in a few days. I most strictly commend the zeal and professional ability of this officer to the attention of the chief surgeon, believing him worthy of special mention."

Acting Hospital Steward Frederick W. Boschen for gallantry and efficiency in the performance of his duties during the battles at Bagbag, San Fernando, Angeles, Bamban, and other engagements during the march of the division north; also for his clerical work as chief clerk to the chief surgeon of the division. Acting Hospital Steward William Vogt for gallantry and efficiency in the performance of duty during the actions at Taytay, Paranaque, San Fernando, Angeles, Bamban, and for his clerical ability in the office of the chief surgeon of the division. Acting Hospital Steward Angus Peete for his efficient clerical work in the office of the chief surgeon of the division. I invite attention to the list given by the chief surgeon of the Fifth district in his report. (See p. 657.)

On my assignment to the division as chief surgeon December 21, 1900, it contained 17,766 officers and enlisted men, 91 posts and 51 medical officers, 16 hospital stewards (regular and volunteer), 15 acting hospital stewards, and 261 privates. When relieved, June 8, 1900, the department contained 25,550 officers and enlisted men, 226 posts, 124 medical officers, 30 hospital stewards (regular and volunteer), 65 acting hospital stewards, and 762 privates of the hospital corps.

## REPORT OF LIEUT. P. C. FAUNTLEROY, ASSISTANT SURGEON, UNITED STATES ARMY, ON THE SECOND DIVISION HOSPITAL AT ANGELES, PAMPANGA, LUZON, MADE JUNE 1, 1900, TO THE CHIEF SURGEON, DEPARTMENT OF NORTHERN LUZON.

In compliance with instructions in letter, chief surgeon's office, Department of Northern Luzon, dated Bautista, P. I., May 4, 1900, I have the honor to submit the following report, accompanied by photographs of this hospital, from January 1, 1900, to May 31, 1900:

The hospital, since September 29, 1899, has been located in the cathedral and its adjoining buildings at Angeles, P. I. The cathedral is built in a large open square, fronting on a road running east and west, and situated on the southern boundary of the town, about 1¼ miles south of the railroad depot. The walls and belfry towers are built of artificial stone. The roof, together with the large dome situated on the rear end, is of corrugated iron. The interior is about 100 feet wide and 200 feet in length, divided into three aisles by a row of large pillars on either side of the center aisle, which is about 50 feet in width. The altar is about 4 feet above and occupies the last 30 feet of the main floor, extending the entire width of the interior. In rear of the altar is a large vestry with two adjoining rooms. The floor of the main entrance, side aisles, altar, vestry, and all rooms is of tiling; that of the center aisle is of hard wood. The ceiling of the center aisle is an arch of redwood springing from the top of the large pillars, which are about 25 feet high, and rising to a height of 40 feet above the floor. The interior is always cool in the hottest weather, and very dry in the wet season. The dispensary is located in one of the rooms on either side of the main entrance; the officer of the day occupies the other. The aisles form the medical wards Nos. 1, 2, and 3, respectively; the altar, the surgical ward, together with a small ward for officers; the capacity of each of the wards being about 65 beds. The vestry was utilized for the main operating room, one of the side rooms being used for minor surgery and dressing room. The location and size of the operating room permitted the wounded, during the active operations of the Army and at other times for cases requiring surgical operations, to be brought in and operated on without disturbing the other patients—a very important feature when there were many wounded to be cared for at the same time. An isolation ward of bamboo was built 100 yards to the west and rear of the cathedral. Running east and west about 30 feet from the cathedral is a thick hedge of very tall bamboo which affords shade and protection from the winds continually blowing over the wet rice and cane fields on the other side of the bamboo. On the east side the laundry, stable, and patients' rear are located; on the south, behind the bamboo hedge, the rears for officers and hospital corps, respectively, and on the west the mess halls for patients and hospital corps, the kitchen and bath houses. In the large house extending the front of the cathedral to the west there were sleeping apartments and numerous rooms, which furnished quarters for the medical staff and part of the hospital corps. The rooms on the ground floor were used for subsistence store rooms, record office, and medical supply depot for the Department of Northern Luzon. On the west side of this house two acres were fenced in and the hospital garden planted.

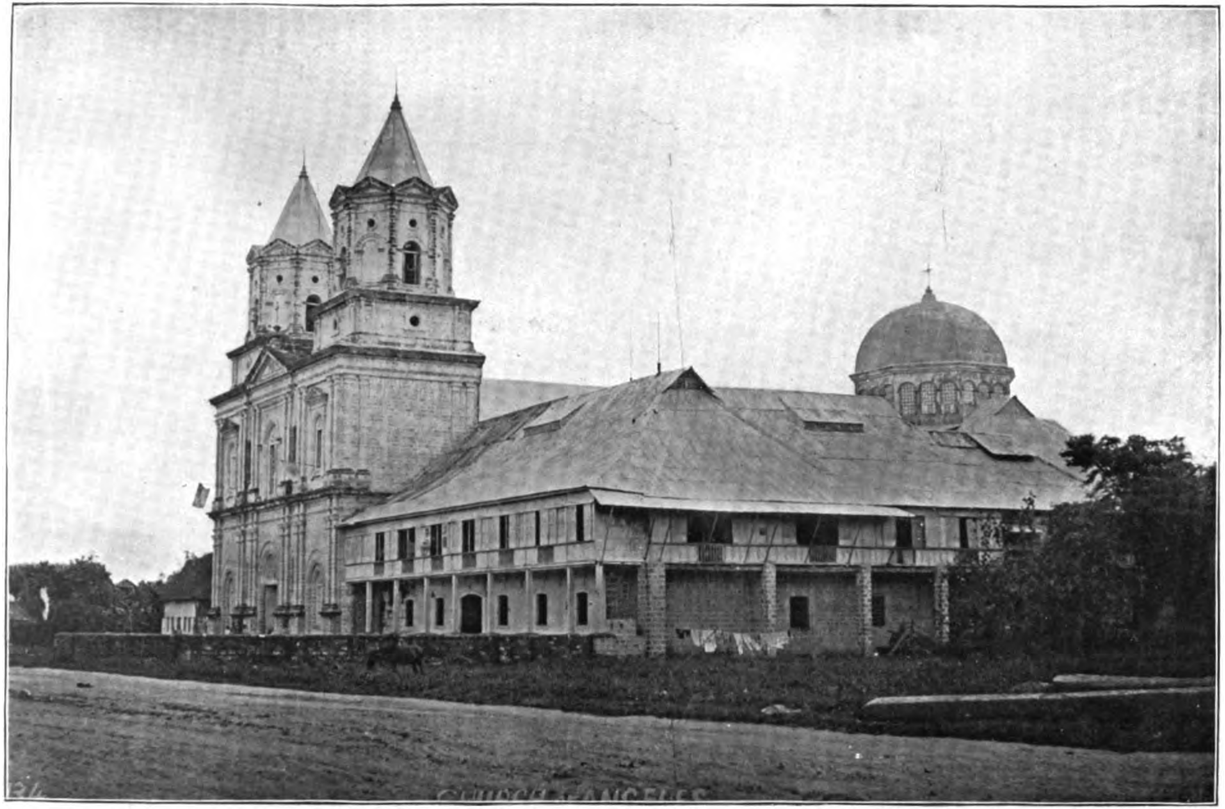
*Administration.*—The commanding officer, there being no executive officer, performed the duties of the latter together with those purely his own. The combining of these two offices being necessary, as no assistant surgeon was available for detail as executive officer. To each ward there was detailed an acting assistant surgeon as ward surgeon, and six privates of the hospital corps, one of whom was assigned as wardmaster, three as day nurses, and two as night nurses; special nurses being assigned when cases required such attention. To the surgical ward two competent privates were assigned to duty in the operating room and surgery. The work of the dispensary was performed by two privates, one of whom, Theodore C. Eppelin, was a graduate of pharmacy. The prescription work of the hospital, and that of a light battery whose sick call was held by one of the surgeons on duty at this hospital, was the work expected of the dispensary. The steward in charge of the medical supply depot having also the property of the hospital in charge, the ward masters obtained their supplies, other than medicines, from him at the hospital storeroom. The kitchen was equipped with two army ranges and a field range. In May, 1900, a bake oven was built. As no other range could be obtained or competent cooks be found in the hospital corps, the preparation of the food for all was done in one kitchen.

*Food.*—The credit of 40 cents per patient per day was found amply sufficient to purchase an abundance of what the subsistence department kept on hand, and in addition all the eggs, chickens, and vegetables which the country afforded. Capt. Harlow M. Street, commissary, United States Volunteers, depot sales commissary, deserves great credit for his uniform courtesy and energy in meeting every requirement of this hospital. At irregular times natives could by hard work gather around Macabebe, P. I., a few days' supply of tomatoes and radishes for the hospital, but the lack of anything like truck gardens on the island prevented the regular supply of fresh vegetables in sufficient quantities. The supply of canned vegetables kept by the commissary met this want as well as could be done by canned food. The malted milk, condensed milk, and evaporated cream, together with canned soups, furnished the greater part of the liquid diet necessary. Farina, rolled oats, cornstarch, tapioca, rice, tomatoes, gelatin, soup, eggs, crackers, fresh meat, and soft bread furnished the light diets. The fine quality of refrigerated fresh meat furnished, together with potatoes, peas, beans, corn, rice, tomatoes, onions, prunes, coffee, and soft bread furnished the heavy diets. A garden was started during the first half of April, and we have an abundance of onions and radishes and lettuce now. This garden has been increased and in time will afford an abundant supply of fresh vegetables, such as onions, radishes, lettuce, spinach, cabbage, and beets.

*Water supply.*—Prior to the middle of April a small quantity of artesian well water was obtained by the railway train from San Fernando, P. I., and the remaining quantity necessary was obtained by boiling the water from a previously-cleaned native well. After that date the water from the native well was sterilized by a Waterhouse-Forbes sterilizer, which afforded an abundant supply of pure and palatable water. About 150 pounds of ice being all that could be obtained from Manila, P. I., the need for more was often felt.

*Medical supplies.*—Medical supplies were obtained from the medical supply depot in Manila, P. I. They were often tardy in arriving, but as far as the essential medicines were concerned they usually were sufficient, and many articles to be considered as luxuries were furnished. The medical supply depot for the Department of Northern Luzon has been in charge of the commanding officer of this hospital. The medical supplies for the indigent natives for the Department of Northern Luzon were bought and distributed by this supply depot. The medicines for this purpose ordered cost $20,000, Mexican coinage, and will be distributed among 67 towns. The funds for the payment of the native vaccinators employed to vaccinate the natives in this department were disbursed from this depot. The cost of this work to date is about $4,500, Mexican coinage.

*Sanitation.*—The dry-earth system, using galvanized iron receptacles, is used. The contents of receptacles from rears, together with garbage, slops, and other refuse from kitchen, mess halls, wards, etc., are hauled away twice a day on native carabao carts about 800 yards from the hospital and buried 3 feet below the surface of the ground, the receptacles being thoroughly washed before they are used again. This system has been in operation at this place for seven months and has proved satisfactory in every way. One carabao cart, 5 Chinos, and 5 natives under a competent private of the hospital corps have performed this work, together with other police work necessary to keep the surroundings of the hospital clean. The complete separation of the kitchen and mess halls from the rears is a feature which is preventive of the spread of any infection from the latter. The hospital corps, besides doing the nursing, keep the wards and interior of the hospital clean. Cleanliness of bedpans, urinals, etc., together with a liberal use of crude carbolic acid in disinfecting them, has done much to prevent the spread of any infection. The laundry work has been done at this hospital by 5 natives, in charge of a competent private of the hospital corps. All clothing, bedding, etc., has been soaked for twelve hours in an acid bichloride of mercury solution, 1:1000, then boiled in a weak alkaline water and afterwards thoroughly washed. To this daily routine is to be attributed the



SECOND DIVISION HOSPITAL, ANGELES, LUZON.

freedom in the hospital from the spread of skin diseases, such as pemphigus contagiosus, tinea circinata, and other diseases, notably smallpox and typhoid fever.

*Malarial infections.*—The percentage of admissions from this cause was 48.26. The disease was usually of the irregular type, due to the æstivo autumnal and tertian organisms. The frequency of diarrhea as a complication or sequel was marked, and its persistency in many cases will explain the loss of so many days in the hospital by cases admitted for a malarial infection, which is not usually of a severe type. The judicious administration of quinine in solution by the rectum has never failed to terminate an attack. One gram sulphate of quinine thus administered at twelve hours' intervals has proved adequate for the severest cases; in the milder cases, 325 milligrams thrice daily was found sufficient. On admission, cases with high temperature from this or any other cause were given tub baths. In this disease, as in all others among soldiers here, it will be found particularly conducive to a rapid recovery to correct in the early stage any bowel disorder; and to this end fractional doses of calomel or a moderate dose of castor oil will be found to be indicated in the majority of cases. The hypodermic administration of quinine is particularly recommended for the rapidity and certainty with which it kills the organism in the blood; but the administration by the rectum will be found for these cases more satisfactory from its adequacy and its freedom from local irritations and abscesses often following the hypodermic method. In connection with the administration of quinine, it is to be noted, from the frequency of injudicious administration, that the persistent use for days of large doses is to be condemned without reserve, as such overdosing has been the cause of many cases of temporary mental derangement and a far greater number of a less pronounced type of nervous disorder, which retards convalescence in all cases and in the majority precludes the likelihood of complete restoration to duty in this climate. Fowler's solution of arsenic and tincture of the chloride of iron are valuable in the anæmia consequent on this disease.

*Diarrhea* has been the cause of 5.44 per cent of the admissions. Exposure to extreme heat in the dry season and to moisture and chill in the wet season, together with irregularities in eating, are the causes which produce diarrhea in the soldier here. These he can not avoid, in many instances, in the performance of his duty. Debility supervenes in the severe cases of diarrhea, hence the importance of rest and the early stopping of all food for twenty-four hours with a subsequent liquid diet for such cases. Such a course will do much to quiet an irritated bowel, hasten relief, and lessen the number of chronic intestinal disorders of this nature. If, together with this care, the bowel is thoroughly washed out with hot salt enemata, followed by a starch and opium enema, the majority of cases will be found to require little or no medication by the mouth. Anæmia and emaciation are marked features in prolonged cases of this disorder, and require iron and a general tonic treatment. Just now there are many of these chronic cases, incident to the recent campaign, which have reached a stage of anæmia, emaciation, and general debility that nothing short of a sea voyage to the colder climate of the United States will restore to health.

*Dysentery* has been the cause of 4.56 per cent of the admissions. The amœba would seem not to be a frequent cause of dysentery here—most of the cases being grafted on conditions malarial in origin. Cleansing enemata, followed by sedatives with small doses of ipecacuanha combined with salol and opium, have proved very efficient in these cases. When the system has been much depleted, hot saline enemata twice daily, to be retained, will be found very grateful to the patient and restorative. In all jaundiced conditions these hot saline enemata will be found valuable in correcting a stagnant hepatic circulation.

*Skin diseases* have caused 0.32 per cent of the admissions. The wide spread of tinea circinata, so-called dhobie itch, calls for the mention of a remedy, liquor calcis sulphuratæ, which has proved peculiarly curative in this disease. I took this suggestion from "Manson's Tropical Diseases" nine months ago and have never seen a case that it failed to cure. Considering the widespread nature of this disease, the cheapness and simplicity of preparation of the remedy are features that recommend its use aside from its effectiveness.

*Typhoid fever* has caused 0.28 per cent of the admissions—a comparatively small percentage.

### MEDICAL OFFICERS.

The medical staff consisted of one first lieutenant and assistant surgeon, United States Army, and four acting assistant surgeons. Drs. Burke L. Johnson and Gilbert E. Seaman deserve especial mention for their uniformly faithful and efficient work in the medical wards and care of cases of smallpox.

*Hospital corps personnel.*—The hospital corps detachment averaged daily present for duty, 2 hospital stewards, 2 acting hospital stewards, and 52 privates. I have the honor to commend the following hospital corps men: Hospital Steward Paul L. Whitmarsh, United States Army, for faithful and efficient performance of his duty; Hospital Steward Henry C. Senecal, United States Army, for prompt, faithful, and efficient performance of his duty in the medical supply depot; Acting Hospital Stewards Gustav Bornhauser and Ernest A. Boeckh, United States Army, for particularly correct and efficient work and faithful devotion to duty in the record office at all times, and often when in ill health, and for their undoubted qualifications to perform the duties of hospital steward, United States Army, I recommend that they be promoted to that grade on the occurrence of the first vacancies, after conforming to existing regulations. For honest and faithful service: Privates Theodore C. Eppelin, Frederick James, Nickolis Veit, Joseph B. Jensen, Oliver C. Weldon, Edward L. Wilhelm, Ralph W. Ent, Joseph R. Gardner, Walter T. Pulpress, Irwin Kline, and Victor A. Swonberg. I recommend that Privates Eppelin and James be promoted to the grade of acting hospital steward, for faithful and efficient service in the dispensary and medical supply depot, respectively.

## REPORT ON THE BASE HOSPITAL AT DAGUPAN, PANGASINAN, LUZON, BY MAJ. F. H. TITUS, SURGEON, UNITED STATES VOLUNTEERS, TO THE CHIEF SURGEON, DEPARTMENT OF NORTHERN LUZON, DATED JUNE 1, 1900.

The hospital is pleasantly situated on the left or west bank of one of the mouths of the Agno River, about 1½ miles from the Gulf of Lingayen. It is rather an estuary than a river, as the water flows alternately in opposite directions, and is salt. The land is but little above high-tide level. The rise and fall of the tide is small—not more than 3 feet at spring tide. The principal portion of the town of Dagupan lies on the opposite bank of the inlet, while to the west and northwest are salt marshes.

The principal building, and, in fact, the only one used for strictly hospital purposes at present, was intended for a college. It is L shaped; one wing extending north and south along the water front and the other extending westward from the southern end of the first. The lower story is of masonry and the upper of wood. The floors of the lower story are mostly of cement or tiling, and are in quite good condition; but those of the upper floor, which are of wood, are old, and were not of the best quality when new. The cracks between the boards of the flooring and various holes in them allow the free passage of water, and as there is no ceiling to the rooms below, it is impossible to scrub the floors of the second story without almost surely soiling whatever may be in the rooms below. The absence of ceiling also renders the building very noisy. The roof is of galvanized iron, and is in very good repair.

On the north side of the grounds is a stone wall, and on the west front has formerly been a fence of a combination of wood and brickwork, of which the latter only remains.

The kitchen is a temporary expedient of bamboo and nipa, entirely unsuited to the rainy season. A stable of the same material has just been constructed for housing the ambulances and animals. I think it will answer the purpose very well.

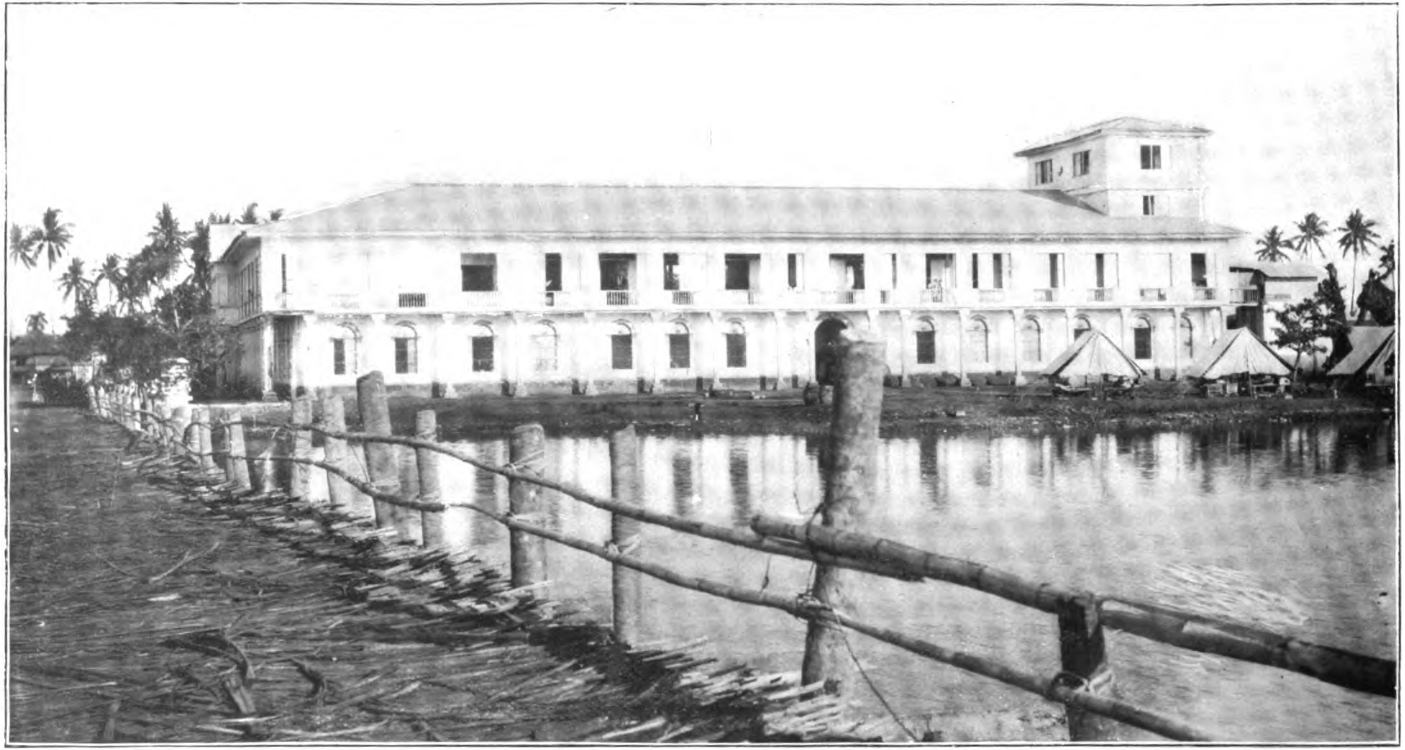
The portions of the building now occupied as wards cover about 17,600 square feet of space, which would give room for 352 patients, allowing 50 square feet to each; but on account of the shape of the rooms some of the floor space is unavailable; allowing 5 feet in length of ward for each bed reduces the number which can be comfortably accommodated without crowding to 293.

In the matter of quarters for officers, female nurses, and men of the hospital corps, the hospital is at present poorly equipped. The officers and nurses are in native houses in the neighborhood of the hospital, none of them suitable for the purpose, while the men of the corps have no shelter but tents. At the request of the chief surgeon of the department, an estimate was sent in for the construction of a suitable barracks for the men. It has been returned disapproved, with orders to floor the tents with bamboo, which it is considered will be sufficient for their comfort in this climate, a view in which I do not participate.

I am informed that a requisition has been made for thorough repairs and additions to the hospital, and also that it will not be approved.

*Food.*—It has at times been difficult to provide the proper kind of diet for the sick, from the impossibility of procuring stores from the commissary. Chickens and eggs are to be procured from the natives, and usually at reasonable rates, but practically nothing else.

*Medical supplies.*—Since my connection with the hospital there has been but little trouble about the supply of medicine, but some badly needed supplies have been slow in arriving.



SECOND DIVISION BASE HOSPITAL, DAGUPAN, LUZON.

*Medical officers.*—The medical officers on duty at the hospital I have found to be competent and reliable. There should in my opinion be one or two additions made to the number.

*Hospital corps personnel.*—The steward and acting stewards are excellent men, but I regret to say that as much can not be said of the privates as a whole, though there are many good men among them.

*Trained nurses.*—There are fifteen trained nurses assigned to duty at this hospital, and most of them are competent and trustworthy. To me it is a satisfaction to have in immediate charge of the sick persons trained to the work.

*Water supply.*—The drinking water in use during the dry season, at least, is procured from wells, and being in the immediate neighborhood of the salt water, is, as would naturally be expected, slightly brackish. It is all boiled and filtered before being used. The supply is ample.

*Sanitation and disposal of fæces, etc.*—Dry earth closets are used. The only method of disposing of fæces, slops, etc., at present possible, is to empty them into the water in front of the hospital, where they, to a large extent remain, as the outgoing tide is not strong enough to carry them far enough out to prevent their floating in again when the tide turns, and from the configuration of the land, and the usual direction of the wind, the refuse seems to lodge mostly in the immediate front of the hospital, to our great annoyance, to say the least. Requisitions have been made for a boat or scow to take the refuse out to sea and dump it, and for a steam launch to tow the same. It is earnestly hoped that these requisitions may be approved.

For the launch there is the still further necessity that there are two bridges between the hospital and the railroad station where nearly all the patients are received, distance about a mile and a quarter, which bridges, I am informed, are carried away every winter, and without water communication of some kind there would be no means of bringing the patients here.

*Special diseases.*—The principal diseases met with are diarrhea, dysentery, and the different forms of malaria; these three causes furnishing 60 per cent of the total of cases. The greater portion of these cases are amenable to treatment; but some are very stubborn, and in all cases of sickness here the debilitating effects of the climate must be contended with. Many cases which would apparently continue indefinitely here, when sent to the United States arrive there quite well.

We have occasional cases of pernicious malaria, which require heroic treatment, and even then the results are by no means always satisfactory.

The treatment of dysentery by large doses of ipecacuanha has been usually followed in this hospital with satisfactory results.

Dagupan is an important station, being the terminus of the railroad from Manila, and also accessible by water. It will probably increase in importance in the future. This building, while susceptible of many improvements, is much better adapted to its present use than most buildings not constructed for the purpose, and the manner in which it has been equipped is, on the part of the medical department, very liberal.

## REPORT OF MAJ. EUGENE L. SWIFT, SURGEON VOLUNTEERS, CHIEF SURGEON SECOND DISTRICT, DEPARTMENT OF NORTHERN LUZON, TO THE CHIEF SURGEON OF THE DEPARTMENT, DATED AT APARRI, MAY 31, 1900.

*Geographical area, etc.*—Provinces of Cagayan, Isabela, and Nueva Viscaya. Command: Sixteenth United States Infantry and two battalions of the Forty-ninth United States Volunteer Infantry. Medical officers 10, including 5 acting assistant surgeons, with 3 hospital stewards, 2 acting hospital stewards, and 41 privates of the hospital corps; no trained nurses.

*Medical administrative features.*—The chief surgeon is stationed at the headquarters of the district at Aparri. Medical officers are not assigned specially to the regiments, but are stationed at posts where their services are needed.

*Methods of caring for the sick and wounded in the field, especially during action.*—Most of the large posts in the district have the medical and surgical chests and sterilizer. Some stations which should have this necessary field equipment are without them. Only two stations Aparri and Tuguegarao, have ambulances. Requisitions have been made for field equipment of stations. Insufficient quantity of litters throughout the district. Transportation for medical supplies when taken in the field inadequate.

*Regimental and camp hospitals.*—There are no regimental hospitals, as the troops of the different commands are intermingled at the different stations. Base hospital of the district at Aparri, a comfortable hospital; supplies running short. Camp hospitals at Alcala, Ilagan, Echague, Solano, and Tuguegarao. All in comfortable buildings.

*Medical supplies.*—Medical supplies very deficient. Requisition made April 5 received here on the 23d instant. Supplies for all stations in the district in need of them are being forwarded as rapidly as possible. This requisition was approved in the office of the chief surgeon, Division of the Philippines, on April 9. A greal deal of it has not been filled, and the former officer in charge of this office did not call for sufficient supplies. In a few days a requisition for supplies sufficient to carry this district through the rainy season will be forwarded. All the posts have been urgently calling for supplies, and until recently there have been none on hand to send them. On my inspection I found troops in the province of Nueva Viscaya almost destitute of medical supplies; requisition forwarded at once by courier, and telegraphic requisition made upon the chief surgeon, Department of Northern Luzon. It is hoped that these supplies reached them before May.

Supplies are obtained for the Cagayan Valley by requisition on the subsupply depot at Aparri; for Nueva Viscaya, overland from railroad to Caranglan, and over the mountains by Corribillos Pass.

*Transfer of sick and wounded to other hospitals.*—Convalescents from long illness, where it is deemed advisable in each particular case, are transferred from the camp hospitals in the Cagayan Valley to the base hospital of the district at Aparri. Chronic cases and cases requiring the attention of specialists transferred in like manner. Nueva Viscaya cut off by reason of the character of the trails leading out of that province.

*Sanitation.*—Sanitation of all camps carefully taken care of. Water boiled. Fæces deposited in deep pits, more than one hundred feet distant from kitchens and barracks, covered over daily with dry earth, and in some posts burned over daily by means of dry leaves or hay. Dry earth closets being shipped to all camps in the district will soon be in use. Slops deposited in pits more than one hundred feet away from the kitchens and sleeping apartments, or hauled and dumped in the large rivers.

*Sleeping arrangements.*—In buildings hired for the purpose; in many camps repairs needed to quarters to keep out the rain.

*Food.*—Army rations. Potatoes unable to be shipped beyond Tuguegarao. All other camps do not get potato ration. Fresh beef at Aparri, Lalloc, Tuguegarao, Ilagan, and Lineo; all other stations seldom get fresh beef. Echague, Cordon, Carig, San Luis, and all other posts in Nueva Viscaya on three-fourths rations up to April 20, 1900; also without fresh meat or potatoes. Fresh meat they have managed to obtain in the set of stations just mentioned about once a week. An epidemic of rinderpest among the cattle in this locality is reported to have recently broken out.

*Cooking, etc.*—Field ranges at all stations.

*Efficiency of medical officers.*—With the exception of Capt. Robert Burns, assistant surgeon, United States Volunteers, and First Lieut. W. P. Chamberlain, assistant surgeon, United States Army, the medical officers are without experience in administrative work, the keeping of records, and the preparation of papers. Acting Asst. Surg. J. S. Hill sick. All officers appear to be zealous in the performance of their duties.

*Efficiency of the hospital corps*—Almost all the men of the hospital corps are recruits or men of short service, and the greater part of them lacking in instruction.

*Prevailing diseases.*—Variola, diarrhea, dysentery, and malarial fever. These diseases were prevalent in the country before our troops entered it. Variola due to the carelessness of the natives and neglect of vaccination. Other diseases mentioned endemic in the country. Malarial fever due to the presence throughout the island of Luzon in an intense form of the germ upon which the disease depends; in Nueva Viscaya particularly malignant. Diarrhea and dysentery due to tropical climate, great moisture, and rainfall, and the drinking of contaminated water. These diseases particularly severe in the province of Nueva Viscaya.

*Vaccinations.*—All the troops at Aparri and in the province of Nueva Viscaya vaccinated, but virus inactive on account of the length of time required to transport to the stations in the province mentioned. Other virus has lately arrived and troops will be revaccinated. Troops of the Second Battalion, Sixteenth United States Infantry, stationed at Ilagan, have been vaccinated during this month, but the two companies of this battalion stationed at Tuguegarao not yet vaccinated. Troops of the Third Battalion, Sixteenth United States Infantry, partially vaccinated during this month. Troops of the Forty-ninth United States Volunteer Infantry vaccinated four times previous to their arrival in the district.

Virus now being sent up the river for the vaccination of the native population. The native population of Aparri and its surrounding barrios vaccinated during this month by native vaccinators.

### REPORT OF LIEUT. W. P. CHAMBERLAIN, ASSISTANT SURGEON, UNITED STATES ARMY, ON THE HOSPITAL AT APARRI, CAGAYAN, SECOND DISTRICT OF THE DEPARTMENT OF NORTHERN LUZON, MADE TO THE CHIEF SURGEON OF THE DEPARTMENT, JUNE 1, 1900.

*Command.*—The command at this post has been the headquarters Sixteenth Infantry, with band, headquarters, and usually three companies of the First Battalion of the regiment. In addition, this hospital receives patients from the remainder of the Sixteenth Infantry and from two battalions of the Forty-ninth United States Volunteers, stationed in this district.

*Hospital buildings.*—The present hospital building has been occupied since the early part of March. It is a substantial structure of large size, with a basement of stone about 8 feet in height. The second story of the building is constructed of wood, with a galvanized-iron roof. Windows are closed with the usual sliding sash, set with oyster-shell plates. Nearly all windows are shaded with nipa awnings. In the basement are the storeroom for the hospital and district supply depot, and also two native shops, from which it has thus far been impossible to have the occupants removed. This basement is for the most part tiled, and is fairly well ventilated. In the lower hall is the dispensary, and sick call is held here. In the hallway of the second floor are placed the tables for the mess of the hospital corps and patients. The office has till recently served also as the office of the chief surgeon of the district. The officers' ward is the most secluded and has 5 beds. There is a large central ward, accommodating 17 patients, and three small wards, one of which is used for colored patients and contains 8 beds. The total capacity of the hospital at present is 46, with an average floor space of 48 square feet and an air space of 503 cubic feet per man. Cubic air space is, however, not an important problem here, as approximately one-third of the wall space is devoted to windows, which are always open, thus offering a rapid change of air. The operating room is conveniently located and well lighted. It is provided with an iron operating table, a Kelly pad, sufficient basins, pitchers, and jars for dressings, and enough of instruments for ordinary needs. Back of the operating room is a room for dressings and instruments, also containing a blue-flame oil stove. No bottles for solutions nor flasks for flushing nor a suitable Arnold sterilizer have been furnished, though asked for on requisition, which was approved. The kitchen is ample in size and has attached a sufficient storeroom, secured by lock and key. An excellent range of large size is provided and does efficient work. The outfit of cooking utensils is enough for all needs, as is also the table equipment. The cots throughout the hospital are of the regulation adjustable pattern and are all provided with three-section hair mattresses, protected with mattress covers. Feather pillows, sheets and pillow slips, pajamas, nightshirts, and slippers are in abundance. Washing is done in a reasonably satisfactory manner by native women, who are paid at the rate of 2¼ cents, gold, per piece. All articles in any way infected are soaked for at least twenty-four hours in carbolic-acid solution (1:20) before leaving the hospital.

*Water supply.*—This is satisfactory. At present the whole post is provided with rain water, which is boiled in a Waterhouse-Forbes sterilizer and then distributed to barracks, hospital, and officers' quarters. Moreover, a supply of rain water is always on hand in the hospital, being kept in a large boiler-iron tank provided for that purpose. Well water in this town is bad, being all from shallow wells affected by proximity to salt water and liable to many kinds of surface contamination. Bathing facilities are satisfactory, a bath tub on wheels and washstand being located in a portion of the hall screened off as a lavatory.

*Food supply.*—This has been, on the whole, satisfactory. Purchase of eggs, chickens, fresh fruit, and vegetables in open market are generally possible, and fresh beef of fair quality is available every other day. Excellent bread is furnished from the post bakery. Certain supplies, such as malted milk, evaporated cream, condensed milk, and some varieties of soups, can not always be obtained from the commissary. Evaporated cream and malted milk have been asked for on medical requisitions, which were approved; but none of the former and little of the latter have been received. The cost of the mess for patients in February was 39 cents per man; in March, 31 cents; in April, 39 cents, and in May, 39 cents. Savings from the hospital corps ration was in January, $11.94; February, $4; March, $4.75; April, $7.67, and in May, $7.21. The hospital fund has been steadily increasing, and on April 30, 1900, the balance on hand was $110.37. Since then $20 have been transferred to the hospital at Ilagan, but the receipts this month will probably be double that sum. This fund is not needed to buy articles of diet. Authority has been requested to expend a part of it to purchase a milch carabao, and another portion to buy certain articles of durable property, which will be very convenient for ward management and which can not be otherwise obtained.

*Disposal of excreta and waste.*—The water-closet is unfortunately situated adjacent to the kitchen, this being unavoidable, owing to the plan of the house. There is, however, no communication between the two, and the walls separating them are papered on both sides. The door is kept constantly closed by a weight. Excreta is received in closed stools, which are kept always covered when not in use, and carbolic-acid solution (1:20) is frequently added to the contents. The receptacles are emptied at regular intervals. A dry-earth closet in a tent back of the hospital is used by the corps men, the pans being daily cleansed by contract labor. Garbage and slops are deposited in barrels and hauled away daily.

*Medical officers.*—The detail of medical officers at this post has been as follows: From January 1, 1900, to March 28, 1900, one assistant surgeon, Lieut. H. S. Greenleaf; from March 28 to May 31, Lieut. W. P. Chamberlain, with, since March 12, one acting assistant surgeon, Dr. Nevil M. Garrett. In addition to post work, the assistant surgeon has, until May 17, performed the duties of chief surgeon of the district, and has acted, and still continues to act, as health officer of the post and sanitary inspector of the town, visiting all steamers and coasting craft on their arrival and departure from the post, and making a bimonthly house to house inspection of the town.

*Hospital corps.*—The men stationed at this post are approximately 1 hospital steward, 1 acting hospital steward, and 12 privates of the corps. During the last two months 2 and at times 3 men have been on detached service. In addition to the regular post hospital work a large amount of additional work has fallen upon the corps here by reason of the correspondence and paper work connected with the chief surgeon's office, and as a result of receiving, assorting, packing, and shipping of medical supplies for other stations in the district. All the members of the corps since my arrival have discharged their duties in a manner reflecting much credit on themselves and upon the officers who supervised their previous training. No instances of distinguished service by medical officers or Hospital Corps men have come to my notice, but prior to my arrival Hospital Steward Thomas D. Hare, United States Army, lost his life in the honorable discharge of his duty, being either shot or drowned on the night of March 1, 1900, when a launch loaded with troops was capsized near Linao, being at the time under heavy fire from the insurgents on shore.

*Hospital Corps quarters.*—A separate house is rented by the quartermaster for hospital corps men. This contains a room each for two stewards and two rooms for the privates.

*Civilian employees.*—No female nurses have been on duty at this hospital. Four natives are employed at the rate of $3 (gold) per month, and are found very useful for doing rough work.

*Administration.*—This has been satisfactory. The mess management is under the direct and constant supervision of an acting hospital steward. An excellent nurse as wardmaster cares efficiently for the needs of the sick. The operating room is under the immediate charge of a private of the Hospital Corps, who is a graduate dentist and possesses an excellent theoretical and practical knowledge of minor surgery and the care of an operating room.

*Equipment and clothing.*—This is satisfactory. The press of work in the case of both surgeons and corps men has prevented systematic training by lectures and litter drill.

*Dentistry.*—A graduate dentist (recently examined for promotion to acting steward), stationed at this hospital, has just received a portion and soon expects the remainder of a complete dental outfit, after which he will be available to attend to the needs of those in the district requiring the attention of a dental surgeon. His employment at this work will doubtless add not a little to the value of the services performed by the Medical Department in this region.

*Medical supplies.*—These have been satisfactory in quality, but many important articles of medicines and dressings have been entirely lacking during May on account of the delay in filling the requisition of April 5 sent from this hospital. The supplies did not arrive until April 23, 1900. Blank forms of many kinds have been exhausted and none have been received, though asked for on requisition dated March 24, 1900. A microscope is much needed and was invoiced to this post, but failed to arrive, and no other has been sent, though asked for.

*Library.*—A library of 15 standard medical works has been supplied to the hospital, and of late medical journals have been sent into this district for circulation among the medical officers here stationed. A large number of old periodicals have been furnished by various societies for the use of patients. A request to purchase standard American newspapers and magazines from the hospital fund was disapproved.

*Character of diseases.*—It is impossible to determine the percentage of total sickness or of any particular disease, because the number of troops served by this hospital has been so variable. No disease has been present in a marked degree, and all have been of mild type. Malaria has never been severe or well marked, and in default of a microscope there has been some doubt as to accuracy of the diagnosis in the cases of slight fevers of short duration. Diarrheal diseases have not been of severe type, but many have shown a decided tendency to become chronic. Venereal diseases were very prevalent here at the time of the arrival of the Sixteenth Infantry from the country just north of Manila, being almost entirely acute gonorrheal and chancroidal. The amount has been steadily decreasing, and in May only one new case appeared on sick report. Skin diseases have been few in number and slight int degree. Only one case of typhoid has occurred, and that probably did not origina e at this town, as the patient entered hospital but twelve days after his arrival here.

*Wounds.*—The marked increase of wounds and injuries in March resulted from the fight near Linao, March 1, 1900. All these gunshot cases occurred before my arrival, and when first coming under my observation presented nothing of marked interest. A compound comminuted fracture of both tibia and fibula, near the ankle, resulted unfavorably owing to impaired circulation in the foot, inability to hold the fragments in proper position, and apparent fibrous union. There is now some ankylosis of the ankle. A perforating gunshot wound of the chest resulted in marked pleural thickening.

*Smallpox.*—No case has occurred among troops at this post, although 13 cases have been found among the natives. All soldiers have been vaccinated twice since arrival at this station. Vaccination of all natives is now in progress.

*Death.*—None among patients have occurred since January 1, 1900. Five men have been killed in action or drowned from this command.

*Transferred.*—Nineteen men have been transferred to hospitals in Manila, of which 12 were for discharge for disability, 3 for special treatment, and 4 for transfer to the United States for benefit of climate.

*Increase in size of hospital.*—The hospital has of late been filled nearly to its limit as a result of patients coming from other parts of this district. The district chief surgeon has stated that still more are likely to be sent to this point as a base, and therefore a request has been made for an additional house which will accommodate about 30 beds, making an aggregate of 76 beds.

*Recommendations.*—This town is in a cool, healthful, and accessible locality, and is likely to continue to be the base for the district, which will for a long time to come require a considerable military force. In view of these facts the following recommendations are respectfully submitted:

(1) That proper hospital buildings be constructed here at the earliest opportunity, thus avoiding the present makeshift policy of occupying native houses, which are difficult to keep clean, are crowded to the lowest safe limit of individual air space, and which can not have the best through ventilation because of partitions dividing them into many small rooms. Particular attention should be given to the construction of the roof, as otherwise the temperature of the wards will be excessive most of the day. Either the building should have a ventilated attic or else the roof should be double, with an air space between. Galvanized iron alone will be exceedingly unsatisfactory. (2) That an ice plant be installed as soon as possible. This was asked for by Lieutenant Greenleaf in March and request was approved by the division chief surgeon. (3) That a small steam laundry be provided in the interests of both economy and efficiency. The advantages of having clothing and bedding boiled at the time of washing are numerous, and no native washerwoman does this. A laundry could be run from the same boiler that furnishes power for the ice plant. (4) That female nurses be provided as has already been requested. Up to the last few weeks their services were not needed, but severe cases are now appearing and will probably continue to appear. (5) That iron bedsteads with woven-wire springs be sent to replace adjustable folding cots.

## REPORT OF MAJ. FRANKLIN A. MEACHAM, SURGEON, UNITED STATES VOLUNTEERS, CHIEF SURGEON, THIRD MILITARY DISTRICT, DEPARTMENT OF NORTHERN LUZON, MADE MAY 31, 1900, TO THE CHIEF SURGEON OF THE DEPARTMENT.

Pursuant to General Orders, No. 1, paragraph 2, dated headquarters Division of the Philippines, Manila, P. I., April 7, 1900, the Third Military district of the Department of Northern Luzon, was created by consolidating the territory occupied by the First and Fourth Brigades, Second Division, Department of the Pacific and Eighth Army Corps.

The Third Military district covers the territory lying within the provinces of Tarlac, Pangasinan, and Zambales, including the towns of Rosales, Cuyapo, and San Juan de Guimba, lying along the northwestern boundary of Nueva Ecija and adjacent to

Tarlac province. It is garrisoned by the Ninth, Twelfth, Thirteenth, Seventeenth, and Thirty-sixth Infantry, with eight companies of the Twenty-fifth Infantry, three troops of the Fourth Cavalry, and two companies of Macabebe scouts.

*Regimental and detachment hospitals.*—At regimental headquarters are located the regimental hospitals in charge of the regimental surgeon, except the regimental hospital of the Thirteenth Infantry, which is located at Dagupan instead of at regimental headquarters at Binalonan, on account of better accommodations and facilities for transportation. These hospitals have a capacity of from 15 to 30 beds and receive their patients not only from the headquarters station but from the various posts at which the regiment is stationed. They are established in some large building conveniently situated and selected for its sanitary surroundings. In towns where there were no suitable building, buildings have been erected at an expense of not over $220 (Mexican), containing dispensary, ward, kitchen, dining, and attendants' room; such buildings were erected at San Juan de Guimba and O'Donnell. The size of these buildings is 20 by 50 feet. At posts at which medical officers are stationed detachment or camp hospitals of from 4 to 10 beds have been established. From these detachment hospitals patients are transferred to the regimental hospital, or direct to the base hospital at Dagupan, or to the field hospital at Angeles, as may be considered judicious. At posts where there are no medical officers, a dispensary has been put in charge of an acting hospital steward, or, as in some instances, a private of the hospital corps selected for his experience and intelligence. At Capas and Murcia, small but important stations along the railroad, a building 10 by 15 feet, suitable for a dispensary, was erected, there being no other building obtainable. The aim has been in preparing for the rainy season to establish these camp and detachment hospitals at posts which are most liable to be cut off from the medical supplies at the regimental hospital, or from the railroad, or which can not be reached by boat, as in certain parts of Zambales province.

Some medical officers must visit several stations, and as these stations are often at a considerable distance apart, it happens that medical officers and hospital-corps men are the greater part of the time in the saddle and necessarily in constant danger in visiting their respective posts, it being impossible on account of the constant movement of troops to obtain a sufficient escort. This work will be doubly severe during the rainy season, on account of the almost impassable roads, unless additional medical officers are provided.

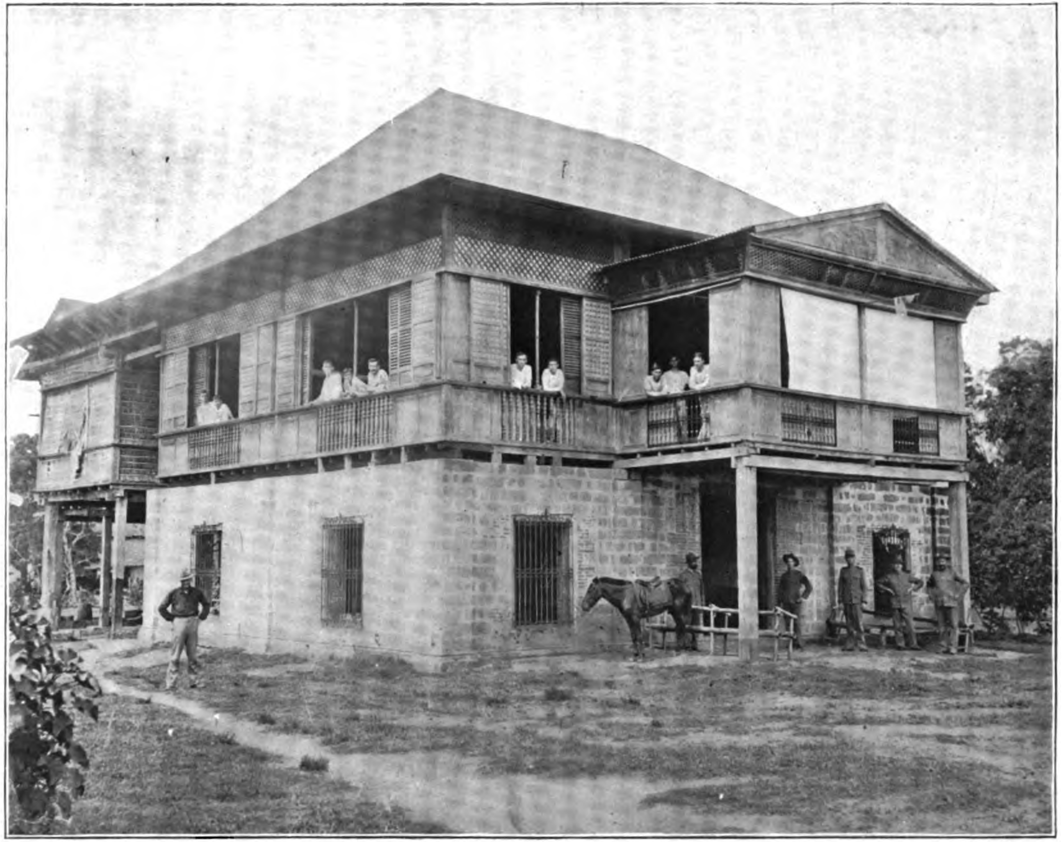
Special diet kitchens have been established at regimental and camp or detachment hospitals quite generally, where men suffering from intestinal diseases and convalescents receive suitable food.

The 40 cents gold allowance covers all needful expenditures and affords ample facilities for surgeons to provide necessary delicacies for the sick.

The following classes of diseases not considered suitable for treatment in regimental, battalion, and detachment hospitals are transferred to second division base or field hospitals: Typhoid and remittent malarial fevers, chronic dysentery, and diarrhea, persistent anemia, serious affections of the eye, ear, bladder, urethra, rectum, stomach, liver, kidneys, skin, and nervous system, and surgical cases needing special operative procedure, and not requiring immediate attention; insanity, tuberculosis, chronic organic diseases of heart, kidneys, etc., and other diseases whose prognosis is unfavorable, are reported to the department surgeon and authority obtained for their transfer to Manila, or such hospital as may be designated, for observation and final disposition.

The muster and pay rolls are prepared at the detachment station, or by the regimental surgeon, as deemed advisable. Every change in status of the personnel of the medical department, such as arrivals or departures, field duty, leaves of absence, or transfer to other stations, is reported to the district surgeon through the regimental surgeon, by telegraph, when practicable, followed by information slip, the district surgeon in turn reporting to the department surgeon. All orders and official papers are transmitted through the regimental surgeons from these headquarters.

*Medical supplies.*—Medical and hospital supplies for this district are obtained from the medical supply depot at Angeles, except for the Twenty-fifth Infantry, in Zambales province, which receives its supplies direct by boat from the medical supply depot in Manila, owing to the length and difficult transportation from Angeles. Each regimental surgeon makes a monthly requisition for such medical and hospital supplies as will be required by his entire regiment for this period. Camp or detachment hospitals and dispensaries are supplied from the regimental hospitals. The medical officers of the various posts make these requisitions once a month upon the regimental surgeon. Medical and hospital supplies have been ample. Food for the diet kitchens is obtained from the regimental sales commissary. Each post has



HOSPITAL SEVENTEENTH UNITED STATES INFANTRY AT BAUTISTA, LUZON.

already been supplied for six months, to carry them through the coming rainy season, beginning with the first day of June.

*Water supply.*—The water supply is from wells, running streams, a few springs, and a good artesian well at Tarlac. The wells are shallow and walled with stones. When our troops first occupied the towns only such wells were used as were recommended by the medical officers after careful inspection. All others were closed. Those selected were cleaned out and the walls raised about 2 feet above the surface and protected by suitable covers. These wells were selected with great care as to the surrounding drainage, and were as far removed from sinks and garbage pits as possible. Water from all sources has at all times been boiled and filtered. Each company has one Pasteur filter. After filtration the water is cooled in large earthen jars, which are cleaned each morning. These instructions have been faithfully carried out during the past dry season by the troops in this district, as far as personal observation and repeated inspections can determine, In a few instances company commanders have kept cold coffee constantly on hand, cooled in the earthen jars. In the regimental hospital, Seventeenth Infantry, weak cold tea has been kept for general use. The task of habituating the soldier to the use of boiled water while in camp has been difficult, its smoky and insipid taste being objectionable, but this has gradually been overcome. Several Waterhouse-Forbes sterilizers have been in use in this district during the past two months. This sterilizer has so far given entire satisfaction, as now furnished for field use, doing away with the objectionable taste heretofore experienced in water boiled over camp fires.

*Laundry and bathing facilities.*—For a long time the laundry facilities consisted simply of native laundresses, who pound out the dirt with clubs in cold water, drying the clothes on the grass in the sun. The majority of the soldiers do their own laundry work, and for a long time used the method practiced by the natives at the streams and pools wherever they happened to camp. It was soon learned that this method furnished abundant opportunity for the transmission of various mycotic diseases. This has been remedied to a great extent by insisting upon the boiling of the clothes, orders to that effect having been issued from Second Division Headquarters. During the past dry season the bathing facilities at the various posts, except those on the larger streams and seashore, have been nil. All seem to have readily adopted the primitive methods of the natives. The regimental hospitals, however, have been furnished with portable bath tubs.

*Barracks and buildings.*—The troops are quartered in the deserted Spanish convents, other public buildings, and nipa houses, throughout the various pueblos and barrios. In the convents and public buildings troops occupy the second story, the first story as a rule being occupied for administrative purposes. The nipa huts occupied are raised from 6 to 8 feet from the ground. The ventilation in all instances is the best, and there is no overcrowding. Barracks and buildings are regularly inspected and are kept neat and clean. Medical officers are held strictly responsible for the sanitary condition of the posts in their command. All barracks and buildings have been repaired and put in condition for the coming rainy season. At such posts where suitable buildings for the rainy season do not exist such buildings for the troops, stores, and animals are now being constructed.

*Policing.*—The policing of the grounds about the barracks and buildings occupied by troops is excellent and is regularly done. This good example has had its influence more or less throughout the various pueblos and barrios. Where troops are stationed such policing is done by the presidente of the town and by the cabezas of the barrios, under instructions from the commanding officers. Large quantities of underbrush, banana trees, and the like have been removed from around the buildings and huts, allowing the free entrance of the sun. The work has been going on throughout the present dry season, and particularly is this true concerning the many market places. These are regularly policed after each market day and the refuse burned. The general appearance of the towns since the advance of our army north from Angeles, November 8, 1899, has improved wonderfully and countless insanitary evils among the natives have been remedied.

*Disposal of waste.*—No ground drainage except by percolation through the soil. Dejecta are disposed of in sinks. The individual covering of the dejecta by dry earth is in use by all troops and is very rigidly enforced. Any neglect of this order is severely punished. At times the bottom of the sinks are covered with twigs, straw, and paper, which are then burned. This entirely destroys any slight odor that may have been present. The digging of pits for kitchen slops and fæcal matter less than 100 yards from the men's quarters is prohibited. Garbage is disposed of in pits and covered daily. This system, during the dry season, has given entire satisfaction. At the present time, as the rainy season is approaching, the dry-earth closet system is in use. Each company and detachment throughout the district, regimental headquarters, and all officers' quarters have been provided with these closets as furnished by the quartermaster's department. These closets are covered by suitable sheds and surrounded by a ditch so dug as to allow all rain water to flow away. This is the only system which can be used during the rainy season with any degree of satisfaction. At posts located on the seacoast closets have been built over the water, with suitable covering. Garbage is collected in barrels and cans provided by the quartermaster's department, which are emptied and cleaned every morning by hired scavengers. At some posts dry earth has been collected and properly protected for use during the rainy season. The natives have no method of disposing of garbage or fæcal matter. In the dry season garbage and fæcal matter in the yards and streets are disposed of by the dogs and pigs, while in the wet season the heavy rains are depended upon to remove the filth.

*Clothing.*—The clothes must be loose and comfortable. On the march part woolen should be worn next to the body. Experience during the past wet and dry seasons shows that the clothing now furnished is fairly well adapted to this climate. The supply at the depots has been sufficient. The shoes and socks give entire satisfaction. For the march the light woolen sock is preferable.

The recent issue of the campaign hat with corrugated sweat bands and ventilation in the sides possesses advantages not obtainable in other form of headgear for constant use and all around field service. It is far superior to the straw hat, and, during the rainy season, to any cork or pith helmet. The latter requires more or less care at all times, both on and off the head.

A part woolen undershirt is necessary to protect the body from sudden chilling. The cotton or nankeen undershirt is cold, clammy, and sticks to the body while in profuse perspiration. This is especially noticeable during the five minutes' rest given hourly on a regular march.

The lighter issue of the blue flannel shirt answers fairly well at all times, but is objectionable in some respects. Its color more readily absorbs the heat and can be distinguished a long distance, making the wearer a good mark for the enemy. A gray flannel shirt of medium weight is preferable. The flannel shirt has the advantage of keeping the body warm, even when wet, night and day. The soldier prefers to wear the blue flannel shirt on the march, with no undershirt, the sleeves rolled up, open in front, and the collar well rolled back. It is thus made very comfortable, the campaigner readily becoming accustomed to the sun's rays. One great objection to this shirt is its irritating effect on the skin. On returning to camp at night the soldier puts on the cotton undershirt as a protection against this irritation.

Of the clothing furnished at present for active campaigning, I have found that the light-gray woolen undershirt of light weight, with an overshirt of chambray or gingham, gives comfort and satisfaction. Personally I have found the most comfort from the gray outing flannel of medium weight, worn with no undershirt. This same material of a khaki color would be still better. It prevents chilling, is never too warm, nor sticks to the body, but absorbs the perspiration and dries readily. A cotton undershirt worn under this while in-camp gives one the greatest amount of comfort, and is sufficiently warm for the night. As the nights here are usually cool, sufficient covering for the abdomen must be worn. For this the blue flannel shirt answers well; in fact, it has become quite customary when not on the march, but lying in camp, for the soldiers to wear the blue flannel shirt at night. The coolness of the night while lying down is severely felt upon the abdomen, often enough to keep one awake and interrupt his rest. Even a slight covering is a help, and for this the flannel bellyband should be worn. The neglect of this is undoubtedly the predisposing, if not often the actual exciting cause of many of our intestinal ailments.

The white jean drawers answer all conditions at all times; they are loose, comfortable, and safe.

The khaki fatigue uniforms are excellent.

During the wet season the large ponchos now furnished are of more service than a rain coat or mackintosh. They protect sufficiently well and are not as hot as the mackintosh; besides, they serve as a blanket or covering at night.

The above remarks refer only to field service.

*Food supply and its preparation.*—The ration as now furnished by the subsistence department to the troops in this climate is of the first quality, and, as a rule, well prepared for use. It occasionally happens that its preparation is faulty, but this is due to the inexperience of the cooks. With the system of company savings it is difficult to see wherein any change in the component parts of the issue ration would be of any material benefit. Such foods, peculiarly adapted to the localities or climate in which the troops are stationed, are obtainable in the markets of such localities. Much of late has been said that the animal foods should be reduced one-half, substituting an equal amount of the farinaceous foods. Experience with the meat ration as issued to-day in these islands shows that our troops in the present hard and continuous campaigns not only require the quantity of animal food they have been accustomed to, but actually crave it and use it with no ill effect. This I have heard expressed by officers and men on many occasions. However, for tropical use I believe the present issue of albuminous compounds and hydrocarbons or fats should be reduced a certain small percentage, more especially the fats, and their place be advantageously taken by the sugars. In other words, the sugar components of the ration for tropical use should be increased. This reduction of animal food is already accomplished by the full allowance of fresh beef seven out of ten days, and equal money value for the remaining three days of other articles for sale issued. This saving, together with the usual company saving on pork and bacon, will purchase the requisite amount of sugar necessary for the increase of this component. All that is really necessary to obtain the best dietary for tropical use is for medical officers to call the attention of company commanders to the fact that in the sugars we have a food that undoubtedly promotes health and enables the soldier to put forth greater exertion to overcome his many hardships. Company commanders may thus vary the daily dietary by the purchase of more sugar for the suitable preparation of the dried fruits, or preserves, jams, and jellies provided by the subsistence department. To the increased sugar component should be added chocolate. In this present campaign, who has not seen and personally experienced the benefit derived from the sweetened chocolate while on a fatiguing march in the hot sun? It is more or less customary to carry in the pocket a package of this sweet chocolate when it can be obtained. The avidity with which the soldiers, both old and young, welcomed the supply of confections sent to these islands bears out these statements. Our troops in the present campaign have done and are still doing more actual work than the ordinary man, and the dietary as modified above answers most admirably. What change in the present ration the conditions of garrison life in times of peace in this climate will receive is a question which must be decided by experience.

*Prevailing diseases.*—Diarrheal and malarial diseases cause by far the greater number of admissions to the sick report, while rheumatism and diseases of the respiratory organs form the smallest proportion. There has been a comparatively small number of cases of typhoid fever since the Second Division advanced north from Angeles last November. The majority of the cases that have occurred developed early in the present dry season, reaching its maximum during the month of March. From March to the present time the number has steadily diminished. That typhoid fever is endemic among the natives in these islands is now beyond dispute. The source of infection among the troops has been clearly traced to drinking water while on the march or scouting. I have already reported cases of typhoid occurring in this command in my weekly inspection reports of December, 1899, January and February, 1900. Since that time there have been abundant opportunities for seeing cases among natives who are sick with the so-called "calentura" or fever, which from its history and the clinical picture presented I recognized as typhoid fever. I have learned also from Dr. Barrera, a native physician of Concepcion, province of Tarlac, that typhoid existed in that town principally during the dry season. He speaks of it as *calentura intestinalis*. I learned the same fact from a native physician at Victoria, province of Tarlac, Dr. C. B. Lazaro. These physicians are well educated medical men, Dr. Lazaro having studied in Paris and Madrid. The recent outbreak of typhoid in a command stationed at Paete, on Laguna de Bay, traced to drinking water, adds additional proof.

All conditions exist among the natives for the prevalence of typhoid in these islands, there being absolutely no sanitary precautions in the rural districts. Dejecta and refuse of all kinds are scattered over the whole country during the rainy season, as reliance is placed upon the rains for cleaning their streets, yards, and outhouses. No one who has seen the native market venders handle and prepare their vegetables and other classes of foods in the same canal or pool wherein they dump refuse and wash their persons and clothing could wonder at the prevalence of *calentura intestinalis* in these islands.

There is a large prevalence of skin diseases, especially of mycotic origin, popularly called dhobie itch, situated in the groins, about the genitals, and in the axillæ. This affection is widely distributed, and often so severe as to unfit men for duty.

*Habits of the men.*—The habits of the men as a rule are excellent. The hard work of patrolling the many roads, scouting, and the vigilance required against frequent attacks, has taken away the greater part of any craving for immoral pursuits. Base ball is not infrequently indulged in. Cleanliness of clothing has been good. Intemperance is rare, although not a few are addicted to the use of the native gin, known as vino or anasau, the effects of which are most disastrous. One death occurred in the Thirteenth Infantry at Magaldan, suddenly, following the eating of a large number of mangoes and drinking a pint of this vino. The establishment of canteens, where cool beer could be obtained, has almost done away with vino drinking.

The percentage of venereal diseases is greater than it should be, occurring largely among those of other vicious habits.

Reading rooms have been established at many of the larger posts, which are of great benefit to the men.

Major Meacham closes his report with an account of the vaccination of natives in the various towns of the district, a summary of which has already been given in the report of the chief surgeon of the department (see page 633).

### REPORT OF MAJ. H. S. T. HARRIS, SURGEON, UNITED STATES VOLUNTEERS, CHIEF SURGEON FOURTH DISTRICT OF THE DEPARTMENT OF NORTHERN LUZON, SAN ISIDRO, JUNE 25, 1900.

The district embraces the province of Nueva Ecija. The following stations along the Rio de la Pampanga are garrisoned by the Twenty-second Infantry: San Luis, Candaba, Arayat, San Antonio and San Isidro. Eight companies of the Thirty-fourth Infantry garrison the towns of Gapan, Penaranda, Cabanatuan, and Bongabong, all of which places are in the eastern part of the valley of Luzon; Aliaga rather to the westward in the edge of the great swamp, and Baler on the east coast. The towns of Pantabangan, Carranglan, San Jose, Hummingan, San Quentin, Tayug, San Nicolas, and Santa Maria, all situated in the foothills or at the base of the mountains, are garrisoned by eight companies of the Twenty-fourth Infantry.

*Stations of medical officers.*—One medical officer is stationed at each of these towns, except San Luis, San Antonio, Gapan, San Quentin, Santa Maria, and San Nicolas, which places are attended by the surgeon of the nearest station. I have recently recommended that an acting assistant surgeon be sent to San Antonio, and also one to Gapan. Santa Maria and San Quentin are only occupied by half a company of troops each, and San Nicolas is only 3 miles from Tayug. San Luis is easily reached from Candaba by a daily boat on the river.

*Personnel of the medical department.*—There are 4 regular commissioned medical officers in the district, 1 volunteer, and 10 acting assistant surgeons. Under recent orders each one-company post will have 3 hospital corps privates, the large posts being proportionally supplied.

*Supplies.*—As a large number of the garrisoned towns will be cut off from all communication during the approaching rainy season it has been necessary to take every precaution to see that full medical supplies for six months should be on hand at every post. My predecessor gave the post surgeons warning months ago in the matter, and I have personally inspected the posts and the amount and character of their medical supplies, and caused requisitions to be made for all lacking articles at once. As the requisitions have always been filled and forwarded by Lieutenant Fauntleroy, acting supply officer for the department, with the greatest possible promptitude, I believe that the rainy season will pass with the least possible amount of suffering to the sick, considering the manifestly disadvantageous circumstances. Attention has also been given to the matter of commissary sales stores for use with the sick, as well as clothing for the well, during the rainy season.

*Hospitals.*—The hospitals of the numerous small posts are located in native houses of the usual style, and are adequate, though not luxurious in appearance. The contemplated extensions will give the district a very respectable hospital at headquarters at San Isidro.

*Character of attendance and administration.*—There is a notable improvement in the class of men enlisted for the hospital corps of late. The acting assistant surgeons employed differ a good deal individually in attainments, the average being good. The hospitals are generally quite well administered, and these gentlemen are gradually beginning to understand our system of paper work.

*Transportation of wounded.*—The work of the troops in the district having mainly been in the mountains where the trails are too rough and the turns too short for travois, the wounded have had to be brought out of the mountains by hand—a task of great difficulty. A litter of bamboo poles, with a horse hitched between the front ends of the poles and two men carrying the rear ends, was used in the foothills by Lieutenant Mitchell, Thirty-fourth Infantry, in bringing in wounded on one occasion. The strain upon the bearers is said to be very exhausting. A one-horse litter would seem to be best adapted to the service, although even this can not be used in the wild mountain country owing to the thickness of the growth.

*Sanitation.*—The sanitary condition of the troops is in general as good as the circumstances will permit. The dry earth-system has replaced the pits for latrines for the rainy season. The food is satisfactory, as also the cooking. All but the most remote posts have had fresh meat two or three times a week. This will not be possible during the rainy season. Some weevils have been noted in some of the sacks of flour.

*Prevailing diseases.*—The prevailing diseases are dysentery and malarial fevers. The summer months seem to be the worst season for the former affection. Last year dysentery almost disappeared about the month of October, from which time until well into December the rate of ineffectiveness from malaria was very high. Drinking water is boiled or sterilized all over the district in garrison, but as the men are constantly on detached service, they necessarily drink a large amount of unboiled surface water, which may account for the prevalence of dysentery. I do not know that my opinion, that the disease is most prevalent in the early part of the rainy season, is borne out by common experience. That malaria is worse just after the rains have ceased is a well-known fact.

*Vaccination.*—Vaccinators have been employed in all the garrisoned towns. Where compulsion in the matter has been used large numbers have been vaccinated, but the majority of the natives seem opposed to it and an order will soon be issued by the district commander directing that the native police be used to aid the vaccinators.

*Conduct in action.*—Acting Hospital Steward Walter K. Barnes, United States Army, will be recommended by the district commander for a certificate of merit for gallantry in attending the wounded under heavy fire during fighting with insurrectos in the mountains June 3 and 5, 1900.

First Lieut. Douglas F. Duval, assistant surgeon, United States Army, and acting assistant surgeon Walter C. Chidester have both acquitted themselves with credit under fire in recent affairs with insurrectos.

## REPORT OF MAJ. HENRY F. HOYT, SURGEON, UNITED STATES VOLUNTEERS, CHIEF SURGEON FIFTH DISTRICT, DEPARTMENT OF NORTHERN LUZON, MADE TO THE CHIEF SURGEON OF THE DEPARTMENT JUNE 19, 1900.

In compliance with instructions from your office dated May 4, 1900, I have the honor to submit report of the medical department of this district from January 1, 1900, to May 31, inclusive.

### GEOGRAPHICAL AREA OF ORGANIZATIONS.

*Third United States Infantry.*—The regiment is stationed along the line of the Manila and Dagupan Railroad from Polo on the south to San Fernando on the north, 2 companies at Hagonoy, 10 miles west of Calumpit, 2 at San Fernando, 1 at Mey Canayan, 1 at La Lombay, 2 at Malolos, 1 at Bulacan, 1 at Luiguinto, 1 at Calumpit, and detachments at Santo Tomas, Polo, Bigaa, and Apalit.

*Thirty-second United States Volunteer Infantry.*—On January 1, 1900, this regiment garrisoned Angeles, San Fernando, Calulit, Mexico, Santa Ana, Denalupijan, and Orani, P. I. On January 16, 1900, the regiment was ordered to garrison Bataan Province in addition to two towns in Pampanga Province, and is at present distributed as follows: headquarters, band, regimental scouts, and Companies C, D, and G, at Balanga, with detachment of C at Orion, and of D at Pilar; Company A, at Mariveles; Company B, at Orion; Company F, at Samal; Companies E and H, at Orani, with detachment of K at Llana Hermosa; Company I, at Florida Blanca; Company M, at Porac. The regiment is distributed on a line of about 80 miles.

*Forty-first United States Volunteer Infantry.*—The command arrived in Manila, P. I., January 4, 1900, in very good condition considering the long voyage and the fact that the men were not allowed ashore except at Singapore. There were no casualties en route. On reaching Manila the sick report consisted chiefly of twenty-two cases of parotitis, which were transferred to hospitals in Manila. For a few days after disembarkation the regiment was stationed at Ermita, Manila. During the month of January eight companies, with 2 medical officers, 1 hospital steward, 1 acting steward, and 8 privates, were stationed at Angeles, Mabalacat, Magalang, and Calulit, on or near the Manila and Dagupan Railroad; the other four companies, with headquarters and band, with 2 medical officers, 2 stewards, and 4 privates, were stationed at various points along the north line of defense of Manila, from blockhouse No. 5 to El Deposito. In February these four companies and headquarters took station along the railroad and from February 5 to May 31 have occupied the following stations: Angeles, Calulit, San Fernando, San Pedro, Magalang, Mabalacat, Calumpit, Bacalor, Guagua, Santa Rita, Sexmoan, Lubao, Mexico, and Santa Ana, and are, May 31, 1900, occupying all the above stations with the exception of San Fernando and Calumpit.

*Thirty-fifth United States Volunteer Infantry.*—For the whole of the period mentioned the regiment has occupied that portion of the province of Bulacan embraced within lines drawn from San Miguel de Mayumo to Biacnabato, thence to Norzagaray, to Santa Maria, to Quingua, to Pulilau, to Baliuag, to San Ildefonso, and thence to San Miguel de Mayumo. Headquarters, First Battalion, and band have been stationed at Baliuag, the Second Battalion at Norzagaray, Angat, Quingua, and Santa Maria, and the Third Battalion at San Miguel de Mayumo and Pulilan. Detachments from the several companies have been stationed at San Ildefonso and Biacnabato. The territory included within these lines and adjacent country outside have been well covered by scouting detachments from the posts.

*Mobile organizations.*—Troop H, Fourth Cavalry, stationed at San Rafael; Troop F, Fourth Cavalry, at Norzagaray; Battery E, First Artillery, and Burr's scouts at Angeles, and the Macabebe scouts at Macabebe, but only part of the time with this command.

### MEDICAL ADMINISTRATION FEATURES.

*Third United States Infantry.*—In the management of the medical affairs of this regiment there are no features worthy of special note.

The numerous stations garrisoned by the Third Infantry and the number of medical officers on duty render the efficient direction of affairs more difficult than if the command were concentrated; the latter would enable me to personally supervise much of the work which, under existing conditions, must necessarily be done on paper. My professional duties, in addition to other duties required of a medical officer, render frequent or protracted absence from my station for the purpose of inspection impossible. The work, however, is progressing in a fairly satisfactory manner.

Sanitation: The work of cleaning the towns garrisoned by the Third Infantry has progressed in a most satisfactory manner considering the nature of the country and the accumulated filth of years, due to the customs and habits of the people.

Water: Good quality, and while many reports of its questionable potability have passed through this office and samples have been sent to Manila for analysis, no report of its evil effects on the men has come to my notice. As far as possible all water used for drinking purposes is boiled and filtered. Water at San Fernando is obtained from an artesian well, located near railroad station, and is of excellent quality.

Fæces: Latrines emptied daily where they are in use and contents buried.

Slops: Removed daily and disposed of as above.

Sleeping arrangements: Troops are comfortably quartered in good buildings, except at Guiquinto and Bigaa, where detachments of Company L are living in tents. Numerous outposts also occupy tents, but these details are subject to frequent changes.

Food: Abundant and of good quality.

Cooking: Good.

Efficiency of the medical officers and hospital corps: Fair.

*Thirty-second United States Volunteer Infantry.*—There is a regimental medical officer stationed with each battalion. The surgeon with headquarters and first battalion, the captain and assistant surgeon with second battalion, and the first lieutenant and assistant surgeon with third battalion. Reports are rendered daily to the surgeon's office by telegraph, except from Mariveles, which has no telegraphic communication. The surgeon, in addition to Balanga, visits Pilar and Abucay, where no medical officers are stationed. The assistant surgeon at Orani visits Samal and Llana Hermosa, and the assistant surgeon at Florida Blanca visits Porac. The surgeon, as far as he can, inspects the garrisons of the regiment, but owing to the fact that there is no available medical officer to relieve him, this is not done as often as desired. All requisitions for supplies are sent through the surgeon's office.

Sanitation: Towns are inspected by surgeons and post commanders, and natives required to keep yards and streets clean. Towns garrisoned by this regiment are in good sanitary condition at present, and improvements are being made. Quarters are regularly inspected by the surgeons.

Water: Water is as far as possible obtained from rivers and running streams and is boiled and filtered. The water from the rivers and mountain streams is excellent in quality.

Fæces: Sinks are located at the proper distances from the quarters, and the fæces are kept constantly covered with dry earth. Where possible they are located over rivers which are not used for water supply. Dry-earth closets have been recommended for the rainy season where river sinks are not available.

Slops: Garbage is burned, and slops are dumped in river where possible or burned.

Sleeping arrangements: Excellent. The regiment is supplied with cots and the quarters are at least 5 feet above the ground.

Food: Supply good and sufficient. Fresh meat is supplied three times a week from Manila, and bakeries are being built at the principal garrisons.

Cooking: Companies are well supplied with good cooks and the facilities for cooking are excellent.

Any other matter pertaining to the health of the command: Men are kept out of sun as much as possible between the hours of 11 a. m. and 4 p. m. Company commanders have received instructions to have men take care of their feet and bathe them and change stockings often. Bathing facilities in running water are good.

*Forty-first United States Volunteer Infantry.*—About March 1 regimental hospitals were established as follows: Angeles—headquarters, 16 beds, afterwards increased to 40 beds; Guagua, 10 beds; San Fernando, 10 beds; and emergency hospitals at Calulit and Santa Ana, 5 beds each. Native houses were used for hospitals. Until about May 1 all serious cases, such as typhoid and contagious diseases, were sent to other hospitals, mostly to Angeles. Since that time owing to the increased capacity of the regimental hospital at Angeles and the more or less permanency of stations, nearly all cases are treated at regimental headquarters. Morning report for May 31 shows absent sick, 23; present sick, quarters, 40; hospital, 49.

Medical supplies: Medical supplies, in addition to those brought from Camp Meade, Pa., have been obtained mostly from subsupply depot at Angeles and with comparative promptness in filling requisitions.

Water: The water supply at the various stations has been variable. At most of the stations it has been obtained from wells and has been of doubtful quality. At San Fernando good water was obtained from an artesian well. At Guagua the water supply has been especially poor. The water from the local wells was brackish and could not be used. Water was brought from San Fernando, but this was found impracticable and the supply had to be obtained from a stream several miles distant and brought in bancas. At all the stations the greatest precautions have been taken to boil and filter the water. Guagua has two "Waterhouse-Forbes sterilizers," and Angeles one, which give good satisfaction.

Fæces: Earth pits have until recently been used for disposal of fæces, being covered twice daily.

Slops: Were disposed of in like manner. Zinc latrines are now chiefly used with removal of contents twice daily.

Sleeping arrangements: The men all have cots.

Food, cooking, etc.: The food has generally been excellent; its cooking variable, depending on the efficiency of the company cooks.

*Thirty-fifth United States Volunteer Infantry.*—The three regimental medical officers have been stationed, respectively, at Baliuag, San Miguel, and Norzagaray, with detachments of the hospital corps proportional to the needs of the posts. We have had no trained nurses. When Companies G, H, and M established posts at Quingua and Pulilan January 22 and 26, Acting Asst. Surg. Edwin N. Bowen was assigned to duty with these commands. Subsequently (March 18) Company G removed to Santa Maria, and on May 4 Acting Asst. Surg. Leonard P. Bell was assigned to duty with it. The regimental surgeons and the two acting assistant surgeons are the total medical officers now with the command. The hospital corps personnel has embraced the 3 regimental hospital stewards, 3 acting stewards, and an average of 22 corps privates. At the present time 2 acting stewards and 1 private are on detached service, 1 acting steward and 3 privates are sick in hospital. Field hospitals have been in operation at Baliuag, Norzagaray, San Miguel, and Quingua. Sick men from other stations have been sent to these hospitals for treatment. These have been well provided with medical and other necessary supplies.

Medical supplies were formerly obtained by requisition of medical officers at separate posts direct upon the chief surgeon of the department, Manila. After receipt of instructions that this be changed they have been obtained upon requisition of the regimental surgeon for the entire command, and subordinate medical officers have received their supplies from this officer at Baliuag.

As to the transfer of sick and wounded to other hospitals, the instructions contained in Circular No. 6, Headquarters Second Division, Bautista, January 22, 1900, have been generally observed. From the regimental hospitals patients have been transferred to the field hospital, Angeles, or the base hospital, Dagupan, and occasionally to the First Reserve Hospital, Manila, when the nature of the case rendered this advisable, the necessary authority in the latter case being previously obtained. Cases of typhoid fever, remittent malaria, malarial anæmia, chronic diarrhea and dysentery, surgical affections of the rectum or genito-urinary organs, and surgical cases needing special operation have been sent to the hospitals above named.

The sanitary condition of the buildings used for hospitals has been satisfactory. Before being occupied the rooms and halls were thoroughly scoured and old water-closets cleaned and disinfected and in some cases closed up. The hospitals have been daily policed and kept in good condition.

Drinking water has been obtained from the rivers passing San Miguel, Norzagaray, Baliuag, and Quingua. The water is always boiled before using and generally filtered, the Army field filter, the Maignen filter, and an improvised filter of sand and charcoal being employed.

The hospital fæces and slops have been either carted off to the river along with similar refuse matter from other premises of the garrison and deposited below the point where the drinking water is obtained or they have been disposed of in large earth pits dug in the rear of hospitals to receive them. The deposits in these sinks have been daily covered with dry earth and chloride of lime when required.

Each hospital has had a sufficient number of cots (wire or canvas) for the patients usually on hand. The quantity of bedding has been ample.

Patients unable to use the regular ration have received the benefit of the 40 cents per day allowance for the sick. This allotment has been found to be quite sufficient. The average cost of subsistence for the sick in hospitals has been about 36 or 37 cents per man per day. The kitchens have had all necessary utensils, and cooking facilities have been satisfactory.

### POST AND CAMP HOSPITALS.

*Third United States Infantry.*—Post hospitals have been established and modestly equipped by all medical officers on duty with the regiment; only such cases as require special treatment are transferred to general hospitals. Each medical officer has been provided with two hospital tents complete and held in reserve to be used in case of emergency, ambulances in good condition, and an abundant supply of medicines and surgical dressings.

*Thirty-second United States Volunteer Infantry.*—The regimental hospital is situated at Balanga, and has a capacity of 16 beds; Second Battalion hospital at Orani, capacity 12 beds; Third Battalion hospital at Denalupijan, capacity 10 beds; company hospital at Florida Blanca, 6 beds; company hospital at Orion, 6 beds; and company hospital at Abucay, 4 beds. The buildings are in good repair and furnished with cots, and in some places mattresses; all have blankets, mosquito bars, pillows, pillow cases, sheets, and all other necessaries for the comfort of the sick. Each post has a building suitable for isolation of contagious cases. Special diet is obtained from the commissary at the different posts.

*Forty-first and Thirty-fifth United States Volunteer Infantry.*—See under "Medical administration features."

*Fourth United States Cavalry.*—Has camp hospital at San Rafael.

*Battery E, First Artillery, and Burr's Scouts* have no camp hospital; all cases are sent to field hospital, Angeles.

### MEDICAL SUPPLIES.

*Third United States Infantry.*—Obtained by requisition on medical supply depot at Angeles; fair supply on hand.

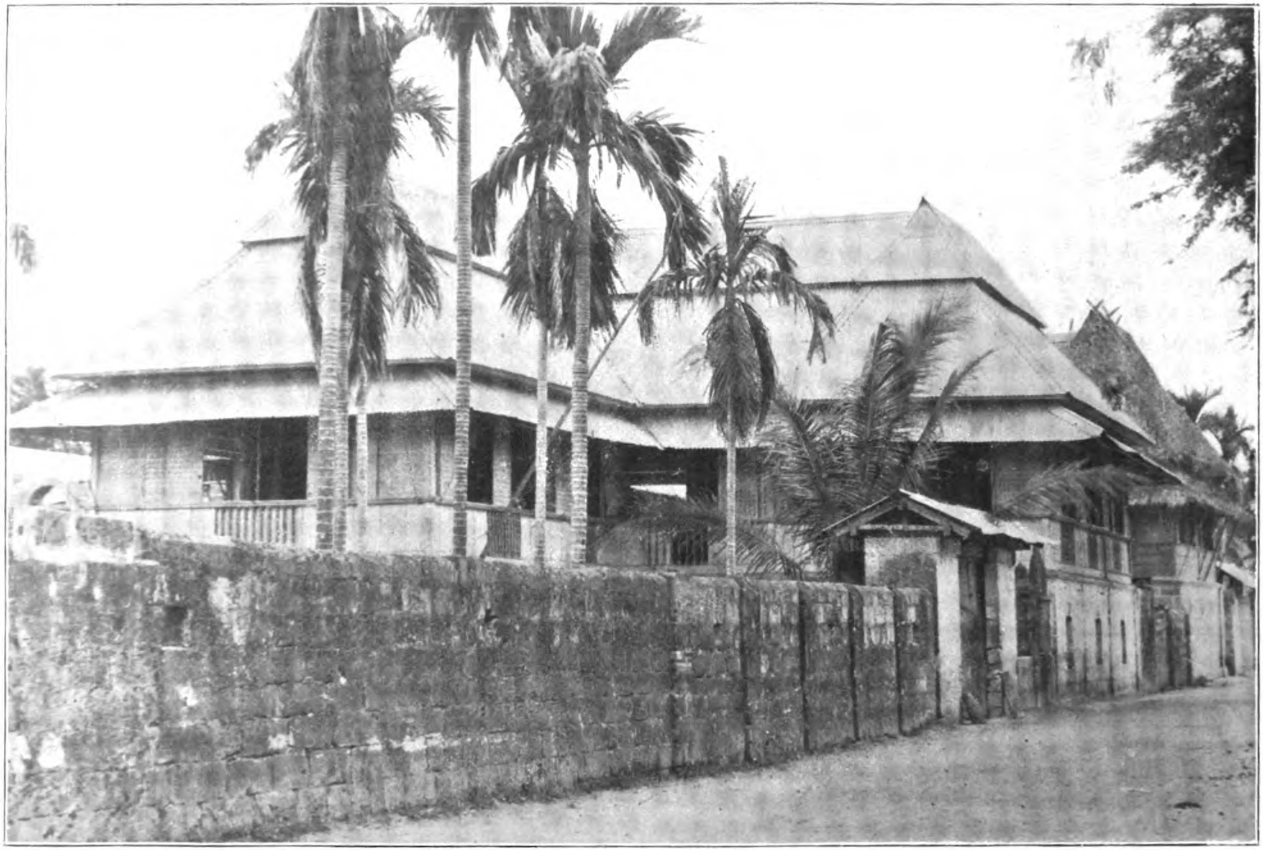
*Thirty-second United States Volunteer Infantry.*—Good supply on hand for the rainy season. Each surgeon is furnished with all the instruments necessary for performing operations required in the field and in regimental and battalion hospitals. Supplies for all stations in the province of Bataan are shipped direct from supply depot in Manila to regimental hospital at Balanga, where they are packed and shipped to the different garrisons. Supplies for Florida Blanca and Porac are furnished and shipped direct from Second Division hospital at Angeles on requisitions from the regimental surgeon.

*Forty-first United States Volunteer Infantry and Thirty-fifth United States Volunteer Infantry.*—See "Medical administration."

### EFFICIENCY OF DEPARTMENT AND SPECIAL MENTION OF DESERVING MEMBERS.

*Third United States Infantry.*—Knowledge of administrative duties and paper work among medical officers poor, but improving.

*Thrty-second United States Volunteer Infantry.*—Standard of efficiency of medical officers serving with this regiment is very high. While many of the men have served scarcely a year in the hospital corps, they have rapidly acquired a knowledge of their duties and have rendered excellent service. Knowledge of administrative work good; knowledge of paper work is fair; efficiency in that direction is increasing. None of the medical officers had any experience in paper work prior to the Spanish-American war.



HOSPITAL THIRTY-FIFTH VOLUNTEER INFANTRY, BAULIUAG, LUZON.

Particular attention and devotion to duty displayed by the following members of the hospital corps in nursing and caring for smallpox cases at this place from February 28 to March 23, 1900: Hosp. Stewards Benjamin Hanson and Theodore F. Knapp and Privates James F. Hammer, hospital corps, and Francis L. Baldwin, Company C, Thirty-second United States Volunteer Infantry, then a convalescent patient in the hospital, and by the following members of the hospital corps in nursing and caring for smallpox cases at this place from April 9 to 15, 1900; Hosp. Steward Theodore F. Knapp and Privates James F. Hammer, Hugh S. Longbottom, and Charles Walsh.

Coolness and systematic action displayed by the following members of the hospital corps in the placing of patients under protecting cover and preparing instruments, dressings, and operating table for immediate use while the regimental hospital was being fired on from different points, in attack on Balanga, April 8, 1900: Hosp. Stewards Hanson and Knapp, and Privates Adam Chart, James F. Hammer, Hugh S. Longbottom, and Charles Walsh.

Hazardous service performed by Hospital Steward Benjamin Hanson, in removing bodies of killed American soldiers from the field, in an ambush made by the insurgents about 4 miles west of Orion, P. I., April 11, 1900.

Coolness and systematic action displayed by Acting Hospital Steward Ivan N. Karlson and Private Harry W. Hutchinson during an attack on Abucay, P. I., May 25, 1900. Acting Hospital Steward Karlson participated in engagement at San Luis, May 17, 1899, at Paranaque, June 10, 1899, at Zapote Bridge, June 13, 1899, and at Bamban, November 11, 1899. Private John Plant participated in engagement at San Luis, May 17, 1899, and at San Fernando, August 9, 1899. Private Charles Walsh participated in skirmish in the foothills about 4 miles northwest of Abucay, May 16, 1900.

*Forty-first United States Volunteer Infantry.*—The medical officers now on duty with the regiment number 5, in addition to the regimental surgeon, and are all efficient and have shown a willingness and cheerfulness in the performance of their duties. Acting Asst. Surg. John J. Gilhuley, on duty with the Forty-first since January 14, 1900, was especially commended by General Grant for attention to wounded in engagement near Mount Aryat. The hospital corps personnel now numbers 3 hospital stewards, United States Volunteers, 2 acting hospital stewards, and 26 privates. Marcus H. Heldman, the senior, formerly acting steward United States Army, is thoroughly competent and familiar with routine work. The other two were enlisted directly from civil life, and while not as efficient as the senior member are zealous in the performance of their work. The two acting stewards are both most excellent men, competent to fill positions as full stewards of volunteers. The privates are, some excellent, some fair, and others poor. The efficiency of most of them has been excellent, considering the limited time and opportunity they have had for instruction, and although they have had no opportunity to display their efficiency in first-aid action yet, at the post, in the ward, and at any other duties assigned to them at the hospital they have displayed knowledge and willingness to do their part. Private Walter F. Callahan, in an engagement on February 2, 1900, in which one man was mortally wounded, improvised a litter of his own clothes and transported the patient very carefully and ably. Private George D. Dersh, having been put in charge of a smallpox patient, nursed him bravely and carefully to the end.

*Thirty-fifth United States Volunteer Infantry.*—Medical officers and members of the hospital corps have been efficient, and, as a rule, attentive to their duties. Recently the hospital corps has suffered several losses by transfer, assignment to duty on detached service, transfers by sickness, and one discharge by general court-martial, without corresponding gains, so that for months past the working strength of the corps has been at a minimum.

Medical officers have shown good knowledge of their administrative duties and paper work, barring occasional errors due to inadvertence or to misunderstanding of instructions. The writer believes that faithful efforts have been made to keep the paper work up to date and to forward the periodical reports at the proper times.

Since January 1 the only actions in the field have been unimportant skirmishes between small scouting detachments of troops and bands of roving insurgents or ladrones. These scouting parties have generally been accompanied by one or more members of the hospital corps, a hospital steward, or one of the surgeons. Men taken sick or wounded in the field have been removed by the corps attendants or their comrades to the nearest hospital for treatment, and after recovery they have been returned to their proper commands. So far as the writer is aware, there have been no noteworthy incidents of personal bravery or hazardous service on the part of the medical officers or members of the hospital corps. Opportunities for distinguished service of this kind have been lacking. There are three serviceable ambulances with the regiment.

### PREVAILING DISEASES.

*Third United States Infantry.*—Since joining the regiment February 10, 1900, nothing more serious than the ordinary intestinal troubles—diarrhea, acute or chronic, and dysentery of a mild type—malarial fever, apparently recurring in men who had seen service in Cuba and were exposed more or less to favorable conditions for its redevelopment, and with my immediate command an unusual amount of venereal diseases. As to the intestinal troubles, no one cause can be held entirely responsible for their production. Indiscretion in eating, especially the various tropical fruits, no doubt is responsible for a major part of the acute diarrhea. Dysentery, in all probability, is largely due to the wide variations in temperature, night and day, and fatigue diminishing the resisting power of the tissues and allowing infection to take place. Mild cases, catarrhal form, are no doubt a continuation of a neglected acute diarrhea. The regiment at the present time seems particularly free from any serious intestinal troubles, except several cases which have continued on to the chronic state, and, in my opinion will not recover in this climate under the present conditions. Of malarial fevers and venereal diseases, opinion as to the cause is not necessary. Of the acute infectious diseases, one case of smallpox developed at Malolos in February, was transferred to Second Division hospital, Angeles, and died there three days later. The entire command at that post was revaccinated. No other case developed. With this exception the regiment has been entirely free from this type of disease. The command has been affected with the usual amount of dhobie itch and sore feet. Several cases of hernia have been transferred for operation.

*Thirty-second United States Volunteer Infantry.*—Malarial fever has been the prevailing disease; dysentery and diarrhea have been next in order. In January dhobie itch was prevalent, but it has diminished of late. Diarrhea has probably been caused by overeating of fruit and, especially on marches, by drinking water that has not been boiled and filtered. The same may be said in regard to dysentery. Malaria here is caused by the large amount of territory subject to tide water. After the ebb the ground is covered with rank decaying vegetation. The cases of smallpox were caused by the fact that there were quite a number of native children affected with the disease during February and March. The command has been repeatedly vaccinated and all but one of the soldiers affected had good scars.

Methods of caring for sick and wounded in the field, especially during action: A hospital corps man is sent with each scouting party or detachment, supplied with necessary first-aid packets, medicines, instruments, and the men are furnished with first-aid packets. Each company is supplied with litters. A medical officer accompanies the larger expeditions. There are ambulances stationed at each post, except Pilar, Samal, Llana Hermosa, and Mariveles, but they are only available short distances from the main road, owing to the character of the country. Sick and wounded are brought to the nearest ambulance station and from there transported to the nearest hospital.

*Forty-first United States Volunteer Infantry.*—The most prevalent disease has been malaria, both pernicious and benign. In reference to the cases of malaria I wish to call attention to the great value of hypodermic medication. I have used this method exclusively and with the most gratifying results; many of the cases were apparently hopeless when first seen. I do not think this method has received the consideration it deserves by the majority of the medical officers on duty in the Philippines. In my opinion much of the dysentery and diarrhea, diagnosed as such and treated purely as such, are cases of pernicious malaria in which blood examinations would reveal the nature of the trouble and in which treatment hypodermically for malaria would cause the disappearance of the dysentery or diarrhea. I have observed this condition in so many cases that it can hardly be mere coincidence. My only plea for this digression is to emphasize the great importance of blood examinations in all cases of dysentery and directing the treatment to the probable cause, malaria. Except as above stated as coincident with pernicious malaria there has been comparatively little dysentery and diarrhea. When speaking of pernicious malaria, I use the term in the broad sense of cases in which the malignant parasites are found and not in the very restricted sense of acute attacks, such as cerebral.

*Thirty-fifth United States Volunteer Infantry.*—The prevailing diseases have been malarial fever, diarrhea, and dysentery, acute and chronic. Typhoid fever has not occurred to any great extent. The round worm (*Ascaris lumbricoides*) has been noted among the men with greater frequency than one expects to find in an adult population. No smallpox case has occurred among the troops. Venereal disease has been comparatively infrequent.

Malarial disease (intermittent, remittent, pernicious, and cachectic) has constituted 48 per cent of the cases in hospital and quarters at Baliuag, 51 per cent at Norzagaray, 62 per cent at Quingua, and 71 per cent at San Miguel. The intermittent tertian type has predominated. The cause doubtless is to be found in the season and in the necessary exposure to the sun on the march. January, February, March, and April, I am informed, are the months of the greatest prevalence of malarial disease in the Philippines. Exposure to the heat and the injudicious use of drinking water from native wells or shallow streams while on march have doubtless been important factors in the production of malaria, the diarrheas, and the few cases of typhoid fever.

## DEPARTMENT OF SOUTHERN LUZON.

### Report of Maj. J. L. Powell, Surgeon, United States Army, Chief Surgeon, Department of Southern Luzon, dated Manila, June 1, 1900, and Addressed to the Chief Surgeon, Division of the Philippines.

In response to letter from your office of April 12, I have the honor to present a report of the operations of the medical department of the First Division, embracing the period from January 1 to May 30, 1900.

Practically the narrative begins on January 4, when Maj. Gen. J. C. Bates assumed command, in consequence of the death of the lamented Lawton. At this time the division numbered approximately 23,000 men, the greater portion of which was resting in camp after the severe ordeal through which it had passed in the campaign that had just come to a close in the northern and central portions of Luzon. Preliminary steps had already been taken for the mobilization, equipment, and concentration of an expeditionary force of six regiments of infantry and two of cavalry for the invasion of the southern provinces of Cavite, Laguna, Batangas, and Tayabas, territory that up to this time had been in exclusive possession of the insurgents. The advance column under Brigadier-General Schwan, consisted of the Thirtieth and Forty-sixth Infantry, nine troops of the Eleventh Cavalry, and five troops of the Fourth Cavalry. What was termed the marching column was commanded by Brigadier-General Wheaton, and was composed of the Fourth, Twenty-eighth, Thirty-eighth, and Forty-fifth Infantry.

The administrative features of these two commands during the active stage of the expedition were among the most important that have taxed the resources and energy of the medical department, individually as well as collectively, and in the results achieved have demonstrated its capacity to meet almost any emergency, while out of it all have been derived most valuable lessons for application upon future occasion.

To Schwan's column was assigned Maj. H. S. T. Harris, United States Volunteers, as brigade surgeon. Maj. Ira C. Brown, United States Volunteers, was the brigade surgeon of Wheaton's command; but it had hardly gotten into motion when Brown was relieved for other duty and Maj. H. P. Birmingham, surgeon, United States Army, assigned to the vacancy.

Seven four-mule ambulances were ordered to report for duty with the advance column, six with the marching column.

Every effort was made at this office to insure the complete equipment for each regiment or fractional part thereof when operating independently, as to medical and surgical appliances and personnel of surgeons and hospital corps men prescribed by existing orders and regulations and the Manual for the Medical Department. A supplementary force of twelve Chinos to each regiment was employed as additional litter bearers, and well they served their purpose, especially when wheel transportation was impracticable, which was constantly the case, owing to the impassable roads and difficult character of the country in the theater of operations. But the regiments were seldom handled as a unit, the detached parts being often separated by long distances, making it the more difficult to divide up in a way to meet every contingency a complement of medical officers, medical and surgical equipment, and personnel of the hospital corps, that under ordinary conditions would have been fully adequate for any exigency.

None of the prescribed classical or tactical dispositions were in any way applicable, but every movement, great or small, brought along with it its quota of sick, wounded, or exhausted, and furnished an extemporized basis, so to speak, for the exercise of every faculty of ingenuity possessed by the surgeons and hospital corps men in improvising measures to care for the disabled and to transfer them to some place of safety. In the majority of instances where engagements occurred the sole means immediately at hand for meeting the demands of the casualty list was limited to the hand stretchers or litters, the hospital corps and orderly pouches and the first-aid packages, and such other small quantities of dressings and essential medicines as could be taken on the persons of the Chinos or hospital corps men, but even with this limited equipment no notable instance of suffering was recorded, and in due time all cases requiring protracted medical or surgical treatment were conveyed to eligible points, many of which eventually became sites of hospitals, regimental or base, of more or less permanence, according to the suggestions of the military situation.

Suitable buildings were to be found in most of the towns. There is scarcely one of any size without its convent, and this in most instances being well adapted for hospital purposes, was invariably used as such. In this way, as the insurgents were driven out of the provinces cited and our troops took up permanent locations, each station soon found itself possessed of a hospital fully equipped for every necessity.

The base hospitals designated from this office were located on the lake shore and on the seacoast. Of these there are Calamba, on the Laguna; Bacoor, Batangas, and Lucena, on the seacoast. They all constitute a base of medical supplies for the interior stations, and each surgeon in charge is to this extent a supply officer.

The Calamba Hospital dates from February 3 last, and the history of its inception is embodied in the report of an inspection made by me to the adjutant-general, First Division, Eighth Army Corps, April 4, 1900, a copy of which I had the honor of forwarding at the time, by your request, to your office. It is admirably equipped, well situated from a military point of view, and can be expanded to accommodate about 200 patients, though at this writing there are about 170 cases. It has a competent force of hospital corps men and eight trained female nurses. Maj. George H. Penrose, brigade surgeon, United States Volunteers, is in charge. Bacoor, originally a small brigade hospital, is the focal point for the commands in Cavite province, as is Calamba for Batangas, and was established by Major Penrose about July, 1899. It has, however, been enlarged and improved, and, like Calamba, is equipped for any sort of cases, medical or surgical. It, too, is a transformed convent building, and is now in charge of Maj. W. P. Kendall, brigade surgeon, United States Volunteers. Farther down the seacoast is Batangas, situated across the neck of land about 40 miles from Calamba. It is a sort of combination regimental and base hospital, and Maj. J. D. Glennan, surgeon, Thirty-eighth Infantry, is in charge. A municipal building has been fitted up for a hospital, and there is ample storage room for supplies. At Lucena is a hospital alike in character to those described, and although but recently established it is assuming a shape under the management of Maj. J. R. McDill, surgeon, Thirtieth Infantry, that will make it equal in importance and efficiency to those that have been mentioned. At Santa Cruz, on the Laguna, is also a combination regimental and base hospital, which is admirable in all its appointments, and is under the efficient administration of Maj. F. A. Winter, surgeon, Thirty-seventh Infantry. It is a good type of a number of buildings at other places that are used for similar purposes. For a more detailed description of it I refer to Major Winter's report and to the photograph that accompanies it.

At all interior stations where troops are located, as at Tayabas, Lucban, Majayjay, San Jose, Lipa, Taunaun, San Pablo, Santo Tomas, Indan, Silang, Dasmarinas, Imus, and many other points with small garrisons or detachments, provision is made for the proper care of the sick and wounded. The equipment in these instances ranges from a mere dispensary, with an acting hospital steward or private of the Hospital Corps, to a complete regimental outfit, its proportions being determined by the size of the command, its distance and accessibility to some more central, amply supplied, and fixed strategical point. The number of sick and wounded at these interior hospitals is limited by orders from this office, the overflow being taken by ambulances to the bases, from which again, in case of crowding, they are brought by water to the hospitals in this city. In anticipation of the rainy season, when land transportation for wheeled vehicles is almost out of the question, medical officers at stations likely to be permanent were ordered to prepare requisitions covering a period of six months, and to have the stores on hand by May 15. This was done according to order.

A comparative state of repose was beginning to succeed the active hostilities that had prevailed in that section, and the troops were settling themselves in more or less permanent abiding places, when another demand was made upon the First Division, Eighth Army Corps, for an expeditionary force, destined for the suppression of insurrectionary demonstrations in the Camarines, a province near the southern extremity of the island of Luzon. This was composed of the Fortieth and Forty-fifth Infantry, and Company G, Thirty-seventh Infantry, with four mountain guns and a detachment of engineers, taking its departure from Manila on February 15, and going by sea to its destination. This brigade was under the command of Brig. Gen. James M. Bell, United States Volunteers, and was known as Bell's Expeditionary Brigade. Arriving in the bay of San Miguel on the east coast of the island, a combined movement was made resulting in the landing and quick possession of the country bordering on the bay, and with the loss of 1 officer killed and about 10 men wounded, reports of which were forwarded in due course to your office.

Maj. Thomas U. Raymond, United States Volunteers, was surgeon of the Fortieth, and Maj. M. W. Ireland, United States Volunteers, of the Forty-fifth Infantry, both men of experience, ability, and energy. Their equipment was limited to the prescribed allowance for troops operating in the field, but it was ample, as a six months' supply was issued. Major Raymond being the ranking officer, assumed the duties of brigade surgeon, and while he was in charge performed them with zeal and excellent judgment. While the number of surgeons and hospital corps men designated to accompany this column was considered sufficient to meet every requirement, the rapid multiplication of small detached commands in the territory in point made the demand for divided medical attendance far in excess, not only of the regulation allowance, but of the additional supernumerary force that it was deemed expedient to assign to duty with the command. The scattering military operations by small bodies of men have created a call for surgeons which it has been impossible in every instance to meet, and there is every indication that as the troops become more permanently located the numerous encampments will increase rather than diminish the already existing necessity for an addition to the number of surgeons which have been allotted to this military department.

At Nueva Caceres the nucleus of a brigade hospital was started by Major Raymond, but in the absence of any wire communication with these headquarters, and owing to the length of time it requires to communicate by sea, it is impossible to keep pace with the daily progress of events in that district. The conditions are about the same, however, as those that existed in Cavite, Laguna, Batangas, and Tayabas, and by a process of evolution the organization and equipment of the medical department in the Camarines will in time, no doubt, settle upon about the same lines as those now prevailing in those provinces.

On March 20 the Fortieth Infantry was relieved from duty in the Camarines and sent to the island of Mindanao, the Forty-seventh Infantry taking its place, and between April 23 and June 1 two squadrons of the Eleventh Cavalry, which had been stationed in the province of Cavite, were added to the force commanded by General Bell.

*Sanitation and health of the command.*—Every possible precaution has been taken by the medical department looking to the preservation of the health of the troops of this division. Medical officers have been enjoined from this office to familiarize themselves with the instructions on camp sanitation contained in the Manual for the Medical Department of the Army, edition of 1899, and to be more than ordinarily persevering in their recommendations relative to the boiling of all drinking water and the care of the sinks.

Where instructions embracing almost every duty of administration and others that properly come within the province of the army surgeon are so complete, and embodied in such concise and convenient form as they are in this little manual, it has been thought the work of publishing from day to day a multitude of orders and circulars from the office of the chief surgeon of the division, expressing about the same thing, would be nothing less than superfluous; and to the end that simplicity, which is believed to be the wisest and best mode in the attainment of every end, might be preserved, it has been the endeavor to place in the hands of every medical officer of the division one of these little books. To in a measure reenforce the manual as to special conditions existing in the Philippines, the chief surgeon of the Eighth Army Corps prepared a most admirable circular (13), which was published from headquarters of the department on February 22, 1900.

With these two, it is believed that nothing has been left undone to educate the most inexperienced among the medical officers of the command to a full appreciation of their responsibilities and to a proper performance of their duties, administrative as well as professional. To each of them was addressed the following letter, dated March 7, 1900, accompanied by the circular cited:

"The inclosed circular is for your information and guidance. Its provisions in every particular will be strictly complied with. In conjunction with the Manual for the Medical Department of 1899, a copy of which can be obtained on application at this office, it should be made the *vade mecum* of every medical officer of the division, and no departure from the instructions and regulations embodied in the two will be permitted to pass unnoticed. Upon receipt of the circular you will at once report the fact by wire to this office."

But withal, the effort to prevent an outbreak of typhoid fever at certain points has not been entirely successful. At Paete, on the lake shore, in the province of Laguna, where there was one battalion of the Forty-second Infanty, it made its appearance in the latter part of March, and soon assumed the proportions of an epidemic. In all about 23 cases were verified by the Widal and other tests, but it is gratifying to report that by the application of vigorous sanitary measures, which unhappily appear to have been neglected too long, its progress was quickly checked, and at this writing, June 1, the command is practically free from the disease. A beautiful mountain stream near which the troops were located and from which water for all purposes was obtained, courses through the village, and by its clear and sparkling features, was suggestive of great purity, a fact that put both officers and men off their guard, and was the cause of a neglect to subject to the boiling process all the water used for drinking purposes. It was discovered that this stream passed by some nipa huts farther up, and it was suggested that there was the source of infection. But this theory was not susceptible of positive proof and the opinion is held by some with equal reason that the germs of the disease may have been brought from some focal point to which the command had been exposed in the active operations in which they had been engaged just prior to their encampment at Paete.

In addition to the measures adopted to correct the existing evil, two Waterhouse-Forbes sterilizers were shipped to that point for the use of the command. As a precautionary measure a number of these machines have been supplied to other points as well where it seemed probable that the drinking water was not pure and wholesome, but the supply of these machines is not equal to the demand throughout the military department. The whole history of the outbreak proves not only the value and importance of the sanitary measures recommended for the camp by the medical department, but the criminality of those in authority who neglect their enforcement.

At San Pablo, in the province of Batangas, where a battalion of the Thirty-ninth Infantry has been stationed, a serious outbreak of illness has recently occurred among the troops, chiefly of a dysenteric character, although three cases of typhoid fever were verified by Lieut. R. P. Strong, assistant surgeon, United States Army, the pathologist, on a recent visit he made by my request, to the base hospital at Calamba, to which point the sick are transferred from the inland stations in that section. At San Pablo, too, where the same ignorance of or indifference to proper health precautions prevailed, the situation was soon relieved by instructions from this office and the commendable efforts of the district surgeon.

The conditions that prevailed at Paete and San Pablo were the occasion of the following order, framed in this office and recommended to the department commander, by whom it was published to emphasize and enforce the sanitary instructions that had been given to the regimental surgeon by the chief surgeon of the department.

CIRCULAR No. 8.

HEADQUARTERS DEPARTMENT OF SOUTHERN LUZON,
*Manila, P. I., May 29, 1900.*

Owing to a recent outbreak of typhoid fever and dysentery of epidemic form among the troops at two of the stations in this department, which it is believed was due entirely to the neglect of well-known sanitary measures, the department commander takes occasion to call the attention of commanding officers to the importance, under all circumstances, of exercising a rigid supervision over the water supply, from whatever source obtained. It is known that typhoid fever and dysentery, the great camp scourges, are water-borne diseases, and inasmuch as the germs of the diseases are destroyed or rendered innocuous by a few minutes' boiling, it is ordered that all water used for drinking purposes be subjected to that process and that the use of any other be forbidden.

In order to carry out this measure, a system of daily inspection of drinking water and canteens will be instituted in each company, and the unnecessary use by any member of the company, of unboiled water for drinking purposes will be regarded as disobedience of orders and treated accordingly.

By command of Major-General Bates:

ARTHUR L. WAGNER,
*Assistant Adjutant-General.*

Diarrhea, dysentery, and the different types of malarial manifestations have been the predominent factors in producing inefficiency and disability in the division, typhoid, the great camp scourge, not figuring, except in the two instances cited, to give alarm or showing any tendency to get beyond perfect control by proper sanitary measures.

Just here I wish to record my approval and commendation of the portable dry earth boxes now issued from the quartermaster's department. As an improvement upon the old-fashioned and opprobrious camp sink, they stand preeminent. They are very light and convenient, and the amount of labor necessary to empty them at proper intervals and keep them clean is small compared with what is required to keep a sink in proper shape as a sanitary device. Besides, the boxes constitute by all odds, a much more effective means from a sanitary point of view of disposing of the excreta.

At stations where it has been practicable to send it, quicklime, in quantities sufficient has been supplied, to be used in such a manner as might be considered most effective.

It is believed that an analysis of the tabular reports will show that the amount of sickness, all things considered, has not been excessive. Smallpox has prevailed here and there, contracted primarily from the natives, among whom it appears to be endemic, but a rigid enforcement of vaccination regulations is required, and in the First Division, now the Department of Southern Luzon, it has been held well in check. With virus obtained from the Manila Board of Health, and purchased out of the civil fund, the medical officers of the command, under instructions from this office, and without making the measure compulsory, are doing most valuable work in extending its benefits to the native population.

The facilities for cooking for the sick while on the march have been primitive, but whenever there was transportation to take them, both food and mess chests have been available, and at every point where there was a stop long enough to justify the organization of a hospital, even on the smallest scale, the 40 cents per day fund for each patient was authorized and purchases made of food from the commissary department, or of articles from the natives, such as eggs, chickens, etc.

*Department of Southern Luzon.*—The First Division, Eighth Army Corps, continued its official existence up to April 7, 1900. On that date, by General Orders, No. 1, headquarters Division of the Philippines, certain military departments were created and their bounds defined. The Department of Southern Luzon was made to include all the territory from a line drawn east and west across the island a short distance north of the Pasig River to the Straits of San Bernardino to the south, and east and west between the Pacific Ocean and China Sea, including all islands adjacent thereto. By the same order I was assigned to the department as chief surgeon.

The character of the operations that had preceded this division into military departments had been very much in the nature of a "mix up," so that no well-defined lines could be drawn marking off brigades, either by organizations or territorial limitations. In consequence of this there was an unavoidable incompleteness in the organization of the medical department, which made it necessary for nearly all the regimental surgeons to report direct to this office, thus imposing upon it an amount of work and a sense of undivided responsibility by no means light.

It is true that the First Brigade, under Brig. Gen. R. H. Hall, United States Volunteers, owing, it is presumed, to its location and the line it had to guard, preserved its autonomy, but this was the only exception. To this command Maj. W. B. Banister, surgeon, United States Volunteers, had been assigned as brigade surgeon, and the efficiency, zeal, and ability he has displayed in the performance of his duties are deserving of the highest praise.

In natural sequence to General Orders, No. 1, headquarters Division of the Philippines, defining the departments, came General Orders, No. 2, headquarters Department of Southern Luzon, defining the districts with reference to natural boundaries, and assigning certain officers to command. The occasion was opportune for the further organization of the medical department, as expressed in the following order of April 19, 1900, the draft of which emanated from this office:

The following medical officers are, upon recommendation of the chief surgeon of the department, assigned to duty as chief surgeons of the several districts in this department:

To the first district· Maj. W. B. Banister, brigade surgeon, United States Volunteers.

To the second district: Maj. George H. Penrose, brigade surgeon, United States Volunteers, in addition to his present independent duty as commanding officer, division base hospital at Calamba.

To the third district: Maj. Richard W. Johnson, surgeon, United States Army.

These officers will report to their respective district commanders for duty.

The functions of administration will devolve largely upon the chief surgeons of districts, who will, at all times, keep themselves in close touch with the office of the chief surgeon of the department. They will constitute the channel of communication between him and the regimental surgeons, in all matters, except when emergency imperatively requires a departure from this rule. All reports and papers of a routine character required of the regimental surgeons must be rendered with promptitude, and to this end telegraphic communication should be utilized freely. This applies particularly to the weekly sick report, forwarded by wire to the chief surgeon of the department, for the information of the commanding general.

It is expected that the chief surgeons of districts will lose no time in putting the machinery of their offices in smooth running order in every detail comprehended in Regulations, the Manual for the medical department, and in Circular No. 13, Headquarters Department of the Pacific and Eighth Army Corps, February 22, 1900. Their good judgment, energy, and efficiency should insure order in administration and promote the well-being and health of the command, and, to this end, periodical inspections of the personnel and equipment of the medical department, and of the sanitation of the camps, constitute an important part of their duties.

By command of Major-General Bates:

ARTHUR L. WAGNER,
*Assistant Adjutant-General.*

Where fidelity to duty has been so universal among the surgeons and personnel of the hospital corps, both on the march and in the camp, whether caring for the sick under the enemy's fire, or in the safer precincts of the hospital out of rifle range, it would seem almost invidious to single out one, more than another, for special commendation. Of Maj. H. S. T. Harris, however, it is but just to make favorable mention for his energy in the trying position he held while chief surgeon of Schwan's expeditionary brigade.

In Major Harris's report, which is herewith appended, attention is respectfully invited to his remarks relative to the gallant conduct of Lieut. E. D. Sinks, assistant surgeon, Thirty-seventh Infantry, while dressing the wounded under fire.

The reports of Maj. W. P. Kendall, brigade surgeon, United States Volunteers, on the Bacoor Hospital; that of Maj. J. D. Glennan, surgeon, Thirty-eighth Infantry, on the Batangas Hospital; that of Maj. F. A. Winter, on the regimental hospital of the Thirty-seventh Infantry at Santa Cruz, and that of Maj. George H. Penrose, on the base hospital at Calamba, are also appended and speak for themselves.

Since the campaign by Schwan's and Wheaton's expeditionary brigades came to a close, there has been a gradual reduction in the number of troops that formerly composed the first division, in consequence of the demands that have been made upon it for service in the southern islands. At the present time the aggregate strength of the forces in the Department of Southern Luzon does not exceed more, perhaps, than 16,000 men.

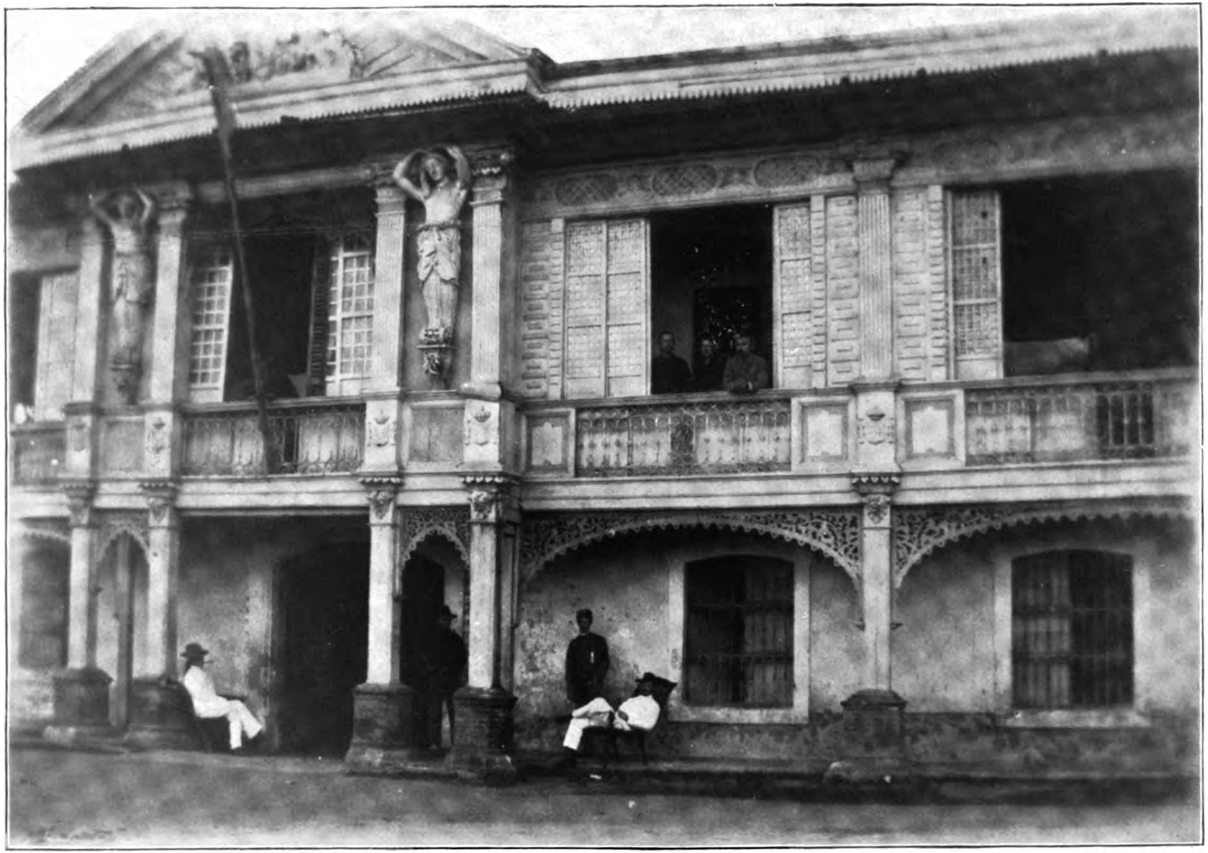
## REPORT OF FIELD HOSPITAL, SANTA CRUZ, LUZON, BY MAJ. F. A. WINTERS, SURGEON, THIRTY-SEVENTH INFANTRY, UNITED STATES VOLUNTEERS, TO THE CHIEF SURGEON, DEPARTMENT OF SOUTHERN LUZON, DATED MAY 14, 1900.

This hospital may be considered a product of Schwan's expedition into Laguna Province, which had its ending at Santa Cruz on January 23, 1900, so far as concerns operations of consequence.

It was established under the direction of Maj. H. S. T. Harris, brigade surgeon, as a field hospital, and has been in active operation as a 60-bed hospital since February 10, 1900. I took charge on February 17. I at once secured the building formerly the city hall of Santa Cruz, as it was well adapted to the purposes of a hospital, though in need of repairs, having suffered like other public buildings during the insurrectionary period. It is a large, airy, cool building, and the front room, accommodating about thirty patients, makes an ideal ward for acute cases. Adjoining this is a small room with eight beds for officers and surgical cases, with an alcove well adapted for use as an operating room. Two smaller wards for officers and a large squad room complete the room features, while a large hall, extending almost the entire length of the building, answers as a dining room. The kitchen is roomy, supplied with a large army range, and has convenient storerooms. A back porch is a convenient adjunct to the kitchen and very suitable for the installation of the Waterhouse-Forbes sterilizer.

Sick men have been received at this hospital from most of the regiments operating on the south lines—the Fourth and Eleventh Cavalry, and the Twenty-ninth, Thirtieth, Thirty-seventh, Thirty-ninth, and Forty-second Infantry. An excellent equipment was speedily obtained. Drugs have been abundant and generally of good quality. The commissary and the surrounding country have provided articles for special diet. Vegetables and all kinds of produce have been abundant, and the allowance of 40 cents a day, with a good hospital fund, has made it possible to feed the sick properly. The most signal need has been ice. I am now procuring it in small quantities from Manila through the post exchange. Malted milk and evaporated cream are the most generally employed articles of special diet. Fresh milk is not obtainable. I have never had a complaint from patients concerning the dietary, and I think they live as well as at any hospital in the United States.

The hospital corps as a rule cooperated with and assisted me in my efforts to maintain a scrupulously clean and orderly hospital. The force of men, with the aid of several Chinese laborers, has generally been adequate, and some of the enlisted force have shown marked ability and proficiency as nurses, etc. The men are required to



FIELD HOSPITAL AT SANTA CRUZ, LUZON.

attend reveille roll call. No man has been tried by general court-martial, though there have been a number of cases of summary court trials. The number of hospital corps men has averaged 18, generally sufficient.

The earth-closet system is used and the receptacles are emptied into the river below the town after thorough disinfection of the contents. It is a fact that but one case of typhoid fever developed in Santa Cruz, and even in this case it is probable that the infection came from an outside source.

There have been treated in this hospital 518 patients. Of these 23 were surgical and 495 medical cases. All indications for surgical intervention have been met and the results have been uniformly good. This hospital, in addition to serving as a base hospital for the troops in this vicinity, has also been a central point for supplies to Paete, Pagsajan, Magdalena, Majayjay, and Lucban; large quantities of drugs have been sent to these points at different times.

In conclusion, I desire to express my thanks to you for your helpful cooperation in the effort to make this hospital a creditable one and a suitable place for the acutely ill in this section of the department.

## REPORT OF MAJ. GEORGE H. PENROSE, SURGEON, UNITED STATES VOLUNTEERS, ON THE BASE HOSPITAL AT CALAMBA, DEPARTMENT OF SOUTHERN LUZON, DATED MAY 8, 1900.

This hospital was opened February 5, 1900, on which date I arrived in Calamba with 2 acting hospital stewards and 15 privates of the hospital corps, finding Acting Assistant Surgeon Macbeth awaiting me. In this town of 10,000 inhabitants there was one large convent that had been used by the Spaniards as barracks. This building, by tearing down and putting up partitions and completely renovating with scrubbing brush and whitewash, was made into two large wards holding 25 patients each, besides a room at the east end to accommodate the hospital corps. The front of the building was partitioned off into a dispensary and operating rooms, with a good-sized dining room and kitchen at the rear. A second house 200 yards away was made into quarters for female nurses, surgeons, and sick officers.

I brought with me from the medical purveying depot in Manila everything that was necessary to establish a base hospital. The hospital throughout is equipped with white enamel beds, woven-wire mattresses, and a perfect equipment for the operating room. In fact, everything necessary to properly open and maintain such a hospital as this was intended to be was provided. The total capacity is now 105 beds, but arrangements are being made to increase this number.

Wounded are at once brought to this hospital from all outlying stations in ambulances or by boat, as the hospital is only a short distance from the shore of the Laguna de Bay. Sick are transferred by the same method, and from this hospital they are sent to one of the reserve hospitals in Manila if their condition becomes chronic. On March 17, 7 contract female nurses reported to me and on the 21st 2 more, making 9 in all. Each ward has one or two trained nurses who with the hospital corps men attend to the sick. The trained nurses have direct charge, the men acting as assistants. One trained nurse has charge of all special diets, personally seeing to their preparation and serving; another has charge of the operating room. The discipline of the men at this hospital has been excellent. Their willingness and intelligence is deserving of the highest commendation. The attention to duty and the educated skill of the female nurses since joining this station has been everything that could be desired; the help that they have given to the seriously sick and wounded has demonstrated what a boon they are to the army. The 40 cents a day allowed by General Orders 182, Adjutant-General's Office, provides every delicacy, including chicken, fresh eggs, fruit, and lemons, everything that the sick may have. It is sufficient for ordinary demands.

For the most part, all troops are now quartered in native houses or shacks. The drinking water throughout the island is universally contaminated, and should never be used without boiling. While much has been done to procure boiled water for drinking purposes, I am of the opinion that the company officers do not pay enough personal attention to this essential point. Some surgeons have been negligent in informing commanding officers concerning the contamination of streams, or the commanding officers have not acted upon the advice. The result has been sharp, but short, outbreaks of bowel trouble, even to typhoid fever. In every instance, however, the trouble has been promptly met and the disease eradicated to a very large degree. The incessant scouting made necessary by this guerrilla warfare, much of which has to be made at night, is conducive to sickness. During these marches the men will drink of any and all water that they come across, and bowel trouble is the result. This may well be called the unavoidable sickness, but the fact of allowing men in the more permanent stations to drink impure water is to be deplored. Constant attention to the hygienic conditions of camps, the introduction of the Waterhouse-Forbes sterilizer, and the general use of the dry-earth closets are fast reducing the sick list to a minimum.

### REPORT OF MAJ. W. P. KENDALL, SURGEON, UNITED STATES VOLUNTEERS, ON THE BRIGADE HOSPITAL AT BACOOR, TO THE CHIEF SURGEON, DEPARTMENT OF SOUTHERN LUZON, DATED MAY 5, 1900.

This point was selected as the site for the base hospital for the troops operating in Cavite Province, and was opened on or about July 22, 1899, by Maj. George H. Penrose, brigade surgeon, Second Brigade, First Division, Eighth Army Corps. It is situated directly upon the shores of Manila Bay, distant 3 miles from Cavite Nueva by water, and about 12 miles from Manila by water and 14 by land. It is connected with Manila by boats, which run three times daily, while a good turnpike connects it with the same point by land. It is the shipping point for all stores and supplies for the interior of Cavite Province, with which it is connected by roads, good in the dry season. Being upon the shore, the ground slopes toward the bay and is well drained. The hospital is situated in the wing of the church of the town of Bacoor, and though this church had been practically destroyed by the ravages of time and the artillery fire of successive, though not always successful, campaigns, it has been made habitable by the restoration of the roof, part of which is of nipa, the rest of corrugated galvanized iron. The numerous openings in the walls, due some to absent window frames, others to effective gun fire, serve for ventilation. The worst of these have been repaired and the protection furnished is all that can be desired.

The hospital consists of one ward in the building mentioned and two tent wards. The building accommodates 40 patients, the tent wards 85; the latter can be considerably expanded in case of necessity. These tent wards are all floored and framed, the floors 18 inches from the ground and connected with the hospital proper by board walks, thus securing communication with the hospital in the most inclement weather. The Hospital Corps is housed in tents, which, like the wards, are framed and floored. As these tents are in perfect condition and are all supplied with a fly raised from the tent proper 4 inches at the ridge and about 12 or 15 inches at the eaves, which method gives a good air space, they are very comfortable even in the hot weather, and are preferred by the men to the building.

The building furnishes, besides the ward, rooms for medical supplies and stores, a dining room for the patients, kitchen, operating room, and rooms for the medical officers. The wards are supplied with either field cots or cots having woven-wire mattresses, which serve their purpose well while in repair; they are, however, easily broken. Mattresses are, as a rule, not used, the patients finding it cooler without them. The patients are generally supplied with pajamas, which they wear day and night, seldom requiring other covering, so that both blanket and sheet, though furnished, are seldom used.

Food supplies are received from both the Commissary Department and the surrounding country, fresh beef of excellent quality being furnished seven or eight times in ten days. As there is no milk in the country, this is furnished in the form either of evaporated cream or Australian milk; both give satisfaction, but the latter is preferred. Eggs are generally obtainable. Fresh fruit, bananas, and mangoes abound in their season. They are, however, especially the mangoes, not cheap. Watermelons of a poor quality also abound; cantaloupes are poor.

Water is supplied in three ways—by wells, seldom used except in case of necessity; by two large cisterns, together having a capacity of 16,200 gallons, and by distilled water, brought daily by the Quartermaster's Department from Manila. The two latter are of excellent quality and the supply ample. Ice is purchased at a cost of 1 cent per pound, and the supply is ample.

The 40 cents per capita per diem allowed for the subsistence of the patients has been found sufficient in all except the rainy season, when prices, especially of eggs and chickens, are greatly advanced.

Bathing facilities are furnished both by the bay—distant 100 yards—to those able to avail themselves of it, and by the tub and sponge baths for those less able.

The latrines are of the dry-earth variety, emptied daily into the bay. They are cared for by native labor. Waste from the kitchen is similarly disposed of.

The laundering for the hospital is done by native labor at a cost of 1 cent per piece, gold.

The operating room is supplied with every convenience necessary to good work, and though slight improvements might be suggested they are more in the nature of reenforcements than actual necessities, as the quality of work done goes to prove.

Large operations, such as amputations of the thigh, for the radical cure of hernia, for appendicitis, etc., have been done with uniformly good success. Many natives apply for assistance, although at first they were unwilling to submit to operative procedures. That they are learning to trust the "Americanos" is an undoubted fact.

The cooking is done by members of the Hospital Corps, and is perfectly satisfactory. When supplies approved shall have arrived, the dining room will be well equipped with all that is requisite.

So far no female nurses have been asked for, as the accommodation for them is not good. The nursing has been done by members of the Hospital Corps. It is hardly to be expected that this service could be equal to that of the professional, yet nothing but words of praise can be spoken for what has been done.

An ambulance service is maintained between the hospital and all interior points, with which the hospital is connected by wire, and ambulances are stationed at the principal places, leaving nothing to be desired under present conditions.

This morning's report showed 21 hospital corps men present for duty, together with 1 hospital steward and 2 acting hospital stewards, sufficient for the needs of the hospital, though, when it is considered that this is also a supply depot, not too many.

At present there are but 2 surgeons at this hospital. It is due the acting assistant surgeons who have been connected with this hospital that they be mentioned in terms of highest praise. They have all done their work well.

The total number of cases treated in the hospital since it was opened is 1,706, with 18 deaths.

## REPORT OF MAJ. J. D. GLENNAN, SURGEON, THIRTY-EIGHTH INFANTRY, UNITED STATES VOLUNTEERS, TO THE CHIEF SURGEON, DEPARTMENT OF SOUTHERN LUZON, DATED AT BATANGAS, MAY 12, 1900.

I have the honor to make the following report on the operations of the medical department of the Thirty-eighth Infantry, United States Volunteers:

The regiment arrived at Manila December 26, 1899, disembarked next day, and left Manila January 1, 1900, on the southern expedition through Bacoor, Imus, Perez, Dasmarinas, Silang, Tolisaye, Tanauan, and Lipa, arriving at Batangas January 16, 1900, where the headquarters of the regiment has since been stationed.

The regiment now garrisons four stations, Batangas, Lipa, San Jose, and Bauang, province of Batangas. During and shortly after the main expedition the regiment or parts of it had engagements and skirmishes at Tolisaye, Luta, Batangas, Taal, Gulibay, Talumpoc, Pao, Cuenca and other places. Small expeditions are constantly sent out from these stations covering the territory under the jurisdiction of the regimental commander.

*Transportation, etc.*—Eight Chino bearers were obtained at Bacoor for the hospital and an ambulance at Imus, but the ambulance and the small wagon train which came from Manila were abandoned at Dasmarinas, owing to the trails being impassable for wagons, and were not seen until after our arrival at Batangas. Carromatas and other carts were impressed at Tanauan and Lipa, and were used to carry sick, wounded, and supplies. The Chinos were used to carry litters and small boxes which had been prepared containing medicines, dressings, and materials for liquid foods, and were very useful as weight carriers, but are by no means as satisfactory as the Hospital Corps in moving sick and wounded. They also required constant watching to prevent their looting. In the present conditions and on short trips their services are no longer required. In the expeditions into the country about here not even carts can be taken. Ponies are used to carry men when necessary, but fortunately no serious case has occurred when wagon transportation was not available. The regular litters have been abandoned on these trips. They are too heavy to be carried all day over mountains. A much lighter litter can be improvised when necessary.

When it was decided that the Thirty-eighth Infantry should remain at Batangas, the other regiments comprising the expedition turned their sick and wounded over to the Thirty-eighth, but our wagon train arrived with supplies, a steamer came in with commissaries, and the hospital ship *Relief* took off a large number of the sick and wounded. The greatest assistance was rendered by the hospital ship in the way of supplies and removal of patients. At no time, either on the march or after arrival here, was there any want of necessary medical supplies or proper food for the sick.

*Hospitals, diet, etc.*—The present hospital at Batangas is in the municipal building, a large, cool, and pleasant building. Two other buildings across the street are also used, one as a detached ward for fever patients and one for quarters for the hospital corps men. Only the second stories are used as wards or quarters. There is also a small depot of medical supplies in the hospital. There are also hospitals in good buildings at the other posts of the regiment.

The sick are subsisted on the 40 cents per day fund. For liquid diets we have soups and condensed milks of different kinds, beef extracts, malted milk, evaporated cream, and recently Australian milk, which is proving very satisfactory. Eggs and chickens are very plentiful here. There has been some difficulty in obtaining fresh beef for the command.

*Sanitation.*—Water is boiled for drinking, and all waste matters from the command are removed from town and emptied into the river near the bay. The native method of disposal of waste on the surface of the ground is a constant menace to us, but our system of removal is being slowly extended to those living in the central part of the town.

*Health, etc.*—The health of the command is good and the number of sick and wounded has been surprisingly small, considering the kind of service. The sick report has been mainly from diarrhea, due to the saline water here; intermittent malarial fever, and sore feet from marching. This is a malarial region, and the country east of here is worse. There have been a few cases of dysentery, but not of the severer forms.

Two cases of smallpox occurred in the regiment, but the disease did not spread. These men have been repeatedly vaccinated, and at least one of them had been considered successful. I believe that much of the virus furnished in the United States is poor, and there is no certainty that the sore produced is a successful vaccination. I would recommend special care in the choice of lymph, and the hypodermatic method of vaccination. The regiment was revaccinated here with carabao virus from Manila, and many cases were successful which had before failed. Typhoid fever and smallpox are believed to prevail extensively among the natives here, due to the absence of all sanitary measures. We have been unable, so far, to vaccinate very many.

Three cases of typhoid fever occurred in the regiment, but the place of infection was discovered and no new case has occurred for a month.

The general condition and physique of the men have improved since enlistment. Young men have developed well; instances to the contrary are few, and the regiment is in good working condition.

The hospital stewards and hospital corps men on duty with the regiment have been equal to every emergency and have done much hard work, being on duty almost constantly. With increased experience their services have become more valuable, and the sick and wounded are intelligently, faithfully, and well cared for.

## DEPARTMENT OF THE VISAYAS.

### REPORT OF MAJ. L. W. CRAMPTON, SURGEON, UNITED STATES ARMY, CHIEF SURGEON DEPARTMENT OF THE VISAYAS, ILOILO, P. I., MAY 31, 1900.

I have the honor to submit the following report of the operations of the medical department for the period from January 1, 1900, to May 31, 1900. This department, originally the Visayan military district and First Separate Brigade, Eighth Army Corps, was organized into a department by General Orders, No. 1, Division of the Philippines, dated Manila, P. I., April 7, 1900, and is divided into four districts.

The first district embraces the islands of Samar and Leyte, the second the islands of Cebu and Bohol, the third the island of Negros, and the fourth the island of Panay. The headquarters of the department are at Iloilo. The department extends over a large extent of territory, and at the present time there are about 72 occupied stations, garrisoned by the following troops: Light Battery G, Sixth Artillery; the Sixth Infantry; headquarters and two battalions of the Eighteenth, and the Nineteenth Regiment of Infantry; the Twenty-sixth, Forty-third, and Forty-fourth regiments of Volunteer Infantry; the Negros organization of native scouts; and detachments of the Signal and Hospital Corps.

The number of medical officers and members of the Hospital Corps serving in the department at the present time is as follows: In the regular service, 1 major, 8 captains, and 2 first lieutenants. Four of the captains hold rank of major in the volunteer service.

In the Volunteers there are 1 major, 3 captains, and 3 first lieutenants. There are 41 acting assistant surgeons, 4 hospital stewards, United States Army; 9 hospital stewards, United States Volunteers; 20 acting hospital stewards, and 21 privates of the Hospital Corps. There are 8 female nurses on duty at the hospital in Iloilo.

At the present time there are twenty-five stations without medical officers, although not without medical attendance. It has been the aim to keep at least one private of the Hospital Corps with every detachment, however small, and an acting hospital steward whenever it was possible to do so. Occasionally a medical officer will have under his charge as many as four different stations, from 5 to 15 miles apart. In visiting these substations not on the seacoast the officer has to travel on horseback, or by such conveyance as he may find, over roads almost impassable in the rainy season, and in some instances dangerous at all times, rendering it necessary for him to have an escort. Stations on the seacoast, while more easy of access, can not be visited with any regularity, for the reason that advantage must be taken of a passing steamer or sailing vessel going in that direction. This, of course, is not an ideal service for troops in the field, but with the limited number of medical officers serving in the department it is the best that can be done, and the results have been far better than might have been expected.

*Care of the wounded on the field.*—Prior to the issuing of General Orders, No. 10, Department of the Pacific, dated February 10, 1900, which prohibited the practice, Chinese laborers were largely used as litter bearers, one member of the Hospital Corps with two Chinamen constituting a litter squad. These, with such medical officers and acting stewards as might accompany the expedition, would operate on the firing line, administering first aid and removing the wounded to some convenient dressing station in the rear, from whence they could be transported by ambulance, bull cart, or such transportation as the country afforded, to the nearest permanent station. There is not much opportunity for varying the ordinary rules in caring for the wounded in engagements against an enemy such as we have. The transportation, as a rule, is very limited, and reliance must be placed almost entirely on the contents of the hospital corps pouches and the first-aid packets for the initial dressings, and as the number of wounded is usually small in comparison with the number engaged, these answer every purpose.

The first-aid packet, while a most valuable adjunct to a soldier's outfit, is by no means perfect in every particular. The great trouble in a tropical country, where the soldier is wet almost constantly from rain or perspiration, is to find a suitable and safe place to carry it where it will not only cease to be an incumbrance, but will not go to pieces from the moisture or become infected. The first-aid packet in its present shape can not be easily disposed of on the person of the soldier without giving him annoyance, especially when he lies down at night with his clothes on after a hard day's work. This could be remedied to some extent by changing its shape, but this would not prevent the tendency to destruction or the liability to infection. In my opinion the one place to carry the first-aid packet where it will be always at hand, safe from infection, and never an incumbrance, is the butt of the rifle, in a chamber made specially for the purpose, the same as is now provided for the ramrod. In place of the present shape the packet could be made into a cylinder, sealed up in tin or lead foil, and could be easily disposed of. The weight of the packet would nearly equal the weight of wood removed, if that should be urged as an objection, or the loss could be easily made up by increasing the weight of butt plate. The packet and the ramrod could be carried in the same compartment, but it is believed that it would be better to have a separate one for each.

*Hospitals.*—There have been no hospitals erected in this department, the buildings used for hospital purposes being either old government buildings, convents, or private dwellings. The hospital in Iloilo, the largest one in the department, occupies four private residences adjoining each other, in the central portion of the town, with a supplementary ward for venereal cases and convalescents in the palace.

These buildings are old and badly out of repair—the chronic condition of all Spanish buildings in this country—and would never have been used for hospital purposes if there had been any choice in the matter. The surroundings are unattractive, but paint and a plentiful use of soap and water have made a wonderful change in the interior. The building known as the palace is in very bad condition and is not susceptible of much improvement, and not much effort is expended on it except to keep it clean. The Iloilo hospital, under the charge of Maj. Herbert W. Cardwell, surgeon, United States Volunteers, is the largest one in the department, having a capacity of about 250 beds. Patients are received into this hospital from all stations in the fourth district, as well as from stations in the third district. The general policy has been to have a small hospital at all of the more important stations for the treatment of ordinary cases. Patients with typhoid fever and chronic bowel troubles requiring a special diet are usually sent to the Iloilo hospital. A hospital of 72 beds has been established at Cebu, in charge of Maj. H. C. Fisher, surgeon, United States Volunteers, the building being a part of an old convent and capable of considerable expansion. There is a small but well-equipped hospital at Bacolod, under charge of Capt. Paul Shillock, assistant surgeon, United States Army, with accommodations for about 40 patients. Another hospital of about the same capacity is located at Capiz, under the charge of First Lieut. E. A. Dean, assistant surgeon, United States Army. These hospitals are all well equipped and have ample accommodations for the care of all the sick in the department.

*Barracks.*—The buildings used for barracks are of the same general class as those used for hospitals, and are well adapted for the purpose in this climate. The subject of ventilation, air space, and overcrowding does not cut as much of a figure in the Tropics as in temperate climates, for the reason that the houses can be so thoroughly opened on all sides, thus giving free access to the wind, which fortunately blows almost continually.

*Subsistence of the sick.*—Until discontinued by General Orders, No. 11, Department of the Pacific, February 6, 1900, all the sick in this department except those treated in the hospital at Iloilo, where the 40 cents per day, as authorized by General Orders, No. 182, Adjutant-General's Office, 1899, was allowed, were subsisted on the 30 cents per day, Mexican, from the public civil fund. This was a very satisfactory way of feeding the sick, but unfortunately it was impossible, after repeated efforts, to induce medical officers, many of them new to the service, to comply with department orders regarding the expenditure, and for this reason it was disallowed. At the present time the sick at all hospitals where rations are utilized are subsisted as provided for in General Orders, No. 182. With the subsistence department and the produce of the country to draw from, medical officers have at their command a wide range of articles of special diet, and it is not believed that the sick of any army in the field are better cared for than our soldiers in the Philippines, where they have all the necessaries of life and many of the luxuries.

While the efficiency and the discipline of the Hospital Corps are open to criticism, it is perhaps better than ought to be expected under the circumstances. A hospital corps in time of war is a very different organization from the same corps under conditions of peace. Many of the men enlisted from civil life, without any military training whatever; they are transferred after serving less than a year in the line, and from the very nature of the service it is simply impossible to give them the proper instruction in their duties. Besides, many of the medical officers are new to the service, and while good men from a professional standpoint, they have not had the necessary training themselves to make them good instructors or disciplinarians. Yet there are enough good men to perform the duty of nursing efficiently, and I have never heard of one who failed in his duty in any way under fire.

Capt. T. S. Bratton, assistant surgeon, United States Army, regimental surgeon of the Nineteenth Infantry, has reported the case of a private of the Hospital Corps on duty in Cebu, which shows what a hospital corps man is capable of doing in an emergency. While Captain Bratton was absent from his station a native woman was badly cut with a bolo, one cut extending from the outer angle of the eye to the ear, allowing, it is said, the eyeball to drop out. She also had several bad cuts in the arm. Private Samuel Jones replaced the eyeball and sewed up the cuts, another private—Henry Becker, Hospital Corps—having administered the anæsthetic. The wounds in the arm were so severe that he advised amputation, possibly on account of the loss of the blood supply. This was refused. In a day or two the arm became grangrenous, and Private Jones again advised amputation, to which the woman consented. Private Becker administered the anæsthetic and Private Jones made a circular amputation above the elbow. At the time of Captain Bratton's report the stump was healed and the wound in the face nearly so. The efficiency of the Hospital Corps may be represented by a sliding scale, from Private Jones to the man who knows nothing, the preponderance being at Private Jones's end of the scale.

*Sanitary condition of the command.*—The health of the troops serving in this department has been uniformly good. Apart from the climate, the principal source of danger to our troops is the drinking water, and it is due to the rigorous enforcement of the order by medical and company officers, that all drinking water must be boiled, that typhoid fever, which, with dysentery, is the disease most to be feared by our troops, has not prevailed to a greater extent.

The total number of cases of typhoid fever treated in the hospital at Iloilo since November 1, 1899, the time the disease became prevalent—before that time there being but a few sporadic cases—is 54. During the same period there have been 6 cases at Capiz. At the present time there are 8 cases in the hospital at Iloilo and 1 at Capiz, all of whom are convalescing. This represents rather a small percentage when it is remembered that typhoid fever is endemic in these islands. The idea has become prevalent that typhoid fever was brought here by the Twenty-Sixth Infantry. This is both true and misleading. The Twenty-Sixty Infantry did arrive here with typhoid, but the disease was prevalent here among the natives long before, and has appeared in other regiments in other parts of the island. It is the common experience of medical officers that cases generally develop after a command has returned from a campaign in the field, when men will drink any kind of water.

Manson, in his work on tropical diseases, says: "It would also appear that soldiers on the march contract the disease in passing through an uninhabited country, in spite of the fact that the camp may be pitched in spots which presumably have never been occupied by man before, and although the men may have drunk only of water from springs and streams that were beyond suspicion of fæcal contamination. Similar testimony comes from Australia, where typhoid has occurred in the back country hundreds of miles from fixed human habitation."

While typhoid fever may be controlled to a great extent by proper sanitary measures, it will never be entirely eliminated from any large body of troops on active field duty in a tropical country.

Smallpox prevails to an alarming extent in these islands, to the great terror of all newcomers, who in a short while pay no attention to it, and although our troops occupy towns and sleep in houses with impunity, the disease has not prevailed among them to any extent, the total number of cases so far being 20, with 5 deaths. This immunity is due of course to the repeated vaccinations to which the men have been subjected.

A vaccine farm has been established in Iloilo and has been in operation since April 1, from which virus is supplied to all parts of the islands, both for the vaccination of the troops and the natives. Instructions have been given to the chief surgeons of districts to use their utmost endeavors by cooperation with the native doctors to organize a system for the thorough vaccination of the natives. This has been done by our medical officers wherever virus could be sent them, and in some places, as in Iloilo, it has been made compulsory. This practice for the time can only be inaugurated in places now held by our troops. Reports have been received from several medical officers showing a marked decrease in the number of cases of smallpox among the natives. With a condition of peace throughout the islands and by the establishment of more vaccine farms, smallpox can in time be made to disappear, or at least cease to be an important factor in contributing to the sick list. It has been found that the virus obtained from the farm in Iloilo is much more effective than that obtained from Manila, for the reason that it is fresher, it being practicable to deliver it in most cases on ice.

When ice machines are placed at more points throughout the department, the question of vaccination of the natives will be very much simplified. The ice machine in Iloilo is the only one that has been in operation for any length of time. Another one has been placed at Cebu, and has been in operation since May 15.

The great source of danger to troops in the Tropics is the drinking water, and the men have learned to realize this, so that they readily take to the idea of drinking boiled water. Of course some men will drink anything, and when on the march drink what the country affords. In some places good springs can be found, but in the dry season water is obtained from shallow wells and small streams, both dangerous for drinking unless boiled. In the rainy season an abundant supply of rain water is collected in overground tanks. In Iloilo distilled water is furnished, but as the delivery of it is rather crude, being hauled in open tanks, some organizations, to avoid a possible contamination, take the further precaution of boiling it. A distilling plant has recently been put in at Cebu. The Waterhouse-Forbes water sterilizer should be furnished to all permanent stations. A few of them have been sent to the department and they operate in a most satisfactory manner.

Generally the health of the troops has been good, a great deal of the ineffectiveness being due to minor troubles, such as the dhobie itch and the small tropical ulcers, which are very annoying and difficult to heal. Dengue is also an important factor in building up a sick report. While typhoid fever stands in the front rank of the diseases to which our army is exposed, dysentery, with its concomitant liver abscess, is much more prevalent and claims many more victims. It is a common expression here that when a man gets dysentery his usefulness is about ended, especially if it becomes chronic, for these cases do not tend to recovery in this climate, and the sooner they are sent away the better.

Both beriberi and leprosy are quite prevalent in some of the islands, and although no attempt is made at segregation no case of either of the diseases has been reported among the troops in this department, and no case of bubonic plague has appeared among either troops or natives.

## REPORT ON THE BRIGADE HOSPITAL AT ILOILO, PANAY, MADE TO THE CHIEF SURGEON DEPARTMENT OF THE VISAYAS, JUNE 1, 1900, BY MAJ. HERBERT W. CARDWELL, SURGEON, UNITED STATES VOLUNTEERS.

In compliance with your instructions to present a report of administration at this hospital for the period beginning June 1, 1899, and ending this date, I have the honor to report that I arrived at this station on September 25, 1899, and was assigned to duty in charge of the brigade hospital. This hospital had been organized by Maj. E. R. Morris immediately after the occupation of Iloilo by the American forces in

February, 1899, using for the purpose a private residence, which was one of the few buildings not destroyed by fire when the insurgents left the town. Some time afterwards an adjoining residence was also secured, as the number of patients increased, and on my arrival I found these two buildings in a fair state of repair, fairly well fitted with beds or cots, and sufficiently supplied with medical and surgical supplies for the care of the 50 to 60 patients that composed the normal number of inmates at that time. In October, 1899, when preparations were in progress for an advance upon the enemy, it was seen that hospital accommodations must be promptly and materially increased. Necessary supplies were readily obtained from Manila, and the second floor of a building adjoining those already in use was secured. These three buildings gave bed accommodations for about 190 patients, with sufficient room for dispensary, operating room, and executive offices.

After November 21, 1899, the troops formerly stationed at Iloilo, Jaro, and Molo were in the field, with the exception of a provost guard for the city, and there was in consequence no proper place for men who would ordinarily have been "sick in quarters." A further addition was then made to the capacity of the hospital by utilizing the upper floor of the "casa gobierno," or palace, at the farther end of the town, for a convalescent or supplementary ward. This building is still in use for the care of venereal cases and a few convalescents requiring only a minimum of attention.

The buildings are not suited for hospital purposes to this extent: More attendants are required for efficient work than would be required in a building arranged for the purpose. No building in this city or its neighborhood is suitable without the expenditure of a large sum for immediate repairs and alterations. The best of the buildings available is practically placed out of consideration, being situated in Jaro, distant from all of the ordinary water routes of transportation.

New buildings now in the course of construction in the city can, it is believed, be secured within the next two months at no greater cost to the Government than those now in use. If these are obtained the hospital will be very well housed.

No trouble has been experienced in securing from Manila all the medical and surgical supplies and appliances required for use, and improvements have been made steadily in substituting iron bedsteads for wood and canvas, and in providing better furniture for the operating and other rooms.

The hospital at present lacks many of the niceties of the magnificent institutions in great centers, but patients receive as good care here as in any civil hospital in which I have worked, and, in addition, with the aid of the allowance for commutation of rations, are much better and more suitably fed. There have been times when temporary deficiencies of the subsistence or quartermaster's departments have tried the souls of those in charge, but as a rule all wants have been promptly and properly met.

The administration of the hospital has not differed from that of any other institution of its kind. The entering patient is met by the clerk in charge of the register, who verifies the patient's name and record. He is then examined by the surgeon detailed for that purpose, Acting Assist. Surg. G. H. Calkins, to avoid possible mistakes in assignment to wards and to prevent the introduction of smallpox into the general wards. Check records furnished by the nurses and verified by the surgeons in each ward are used to trace and check the record of the patient, change in diagnosis or operations of note being recorded daily and immediately transcribed in the register. Clothing collected on admission is checked on a printed list in duplicate, verified by the patient, and one copy delivered to him, while the other copy is recorded and locked with the clothing in a numbered locker. Ordnance property is properly labeled and delivered to the ordnance officer of the department at his storeroom. Valuables are recorded, placed in individual boxes, and deposited in the office safe, which is itself within a vault.

The patient is sent to the ward with a duplicate diagnosis slip, one end of which is signed and filled in by the surgeon at his first visit, and the other end, attached to the ward chart, is signed and filled in on the return of the patient to duty. Comparison of these records prevents mistakes in the permanent record.

On return of the patient to duty two notices are sent out, one to the surgeon of the organization to which he belongs, and one to the commanding officer. If the organization is in Iloilo, the patient is sent direct to report to his commanding officer. If he requires transportation to his command, he is sent, with a printed notice of identification, to the adjutant-general for assignment to quarters and rations till transportation is available.

The medical staff of the hospital has shown little change, Acting Asst. Surgs. G. H. Calkins, R. M. Kirby-Smith, and Henry du R. Phelan having been on duty during the greater part of the period named. Each of these has from time to time done duty in the field in emergency, when expeditions were about to start and no other medical officer was available. Their services have been in every respect above criticism. Dr. Phelan has but lately been relieved by First Lieut. E. W. Pinkham, assistant surgeon, United States Army.

In October, 1899, the Twenty-sixth Infantry, United States Volunteers, arrived at this station, and soon afterwards a case of typhoid fever was admitted from that regiment. This subject has been reported on in full before, but it is proper to say that the rapid scattering of this regiment (infected in the United States) through this island, and the quartering in towns, which in many cases they occupied only temporarily, with the rapid successive admission of case after case of typhoid from its ranks, gave rise to the gravest fear of a serious epidemic. Neither time, effort, nor money was spared to stamp it out, and although about 60 cases were treated in this hospital, no case has been admitted for over six weeks until within the last month, when 3 sporadic cases have been received. The total number of cases on hand now is 7 convalescent and 3 acute cases.

Smallpox is epidemic in the island, and since December, 1899, from 1 to 5 cases among soldiers have been in hospital, in tents set aside for that purpose and isolated. The Quartermaster's Department is now building a nipa smallpox hospital in the same inclosure of Government land with the vaccine farm (lately established here), and in an isolated spot. No cases of smallpox are now on hand, but it is feared that some will accrue with the new stations lately established.

Other diseases which have been treated here are of the same character as those encountered in other parts of the archipelago. Amœbic dysentery improves under quiet and strict dietary, only to relapse on return to duty and the ration. It is evident that return to a higher latitude is the only salvation of this class of cases. It is even doubtful whether a return to and a considerable sojourn in the United States would suffice, unless the case is sent early in its course. I have seen a soldier who was sent to the United States in the fall of 1898 and returned to duty here in 1900 immediately reenter the hospital with severe dysentery. This soldier had an excellent record, and there was no evidence whatever of any desire to shirk duty. Soldiers sent from here to Manila with a view to transfer to the United States frequently improve during the short trip to Manila and seem fit for duty, but almost without exception they have again to enter the hospital very shortly after their return here. Abscess of the liver as a result of dysentery has been seen in a number of cases, but in 2 cases of large mutiple abscesses of the liver no history of either dysentery or the liquor habit was obtainable.

In my opinion no case of true malaria has been treated in this hospital since my arrival. I am willing to admit that a diagnosis of "malarial fever" is a sign of weakness—an admission that no diagnosis has been made.

Bacteriological apparatus has but lately been received, and it is hoped to eliminate the word malaria from the sick report of the hospital.

## REPORT ON THE POST HOSPITAL AT BACOLOD, NEGROS, MADE TO THE CHIEF SURGEON, DEPARTMENT OF THE VISAYAS, MAY 26, 1900, BY CAPT. PAUL SHILLOCK, ASSISTANT SURGEON, UNITED STATES ARMY.

The hospital at Bacolod, Negros, is situated in three buildings formerly used as dwellings, and for which a rental of $110 (Mexican) per month is paid by the Government. The buildings are ample for a hospital of this size, allowing 45 patients to be taken care of. They are in a fair condition of repair except the roofs, which leak. I have repeatedly called the attention of the proper authorities to the bad condition of the roofs, but owing to the owner refusing to make any repairs involving expense unless her rental be increased, the roofs have not been repaired. Under the directions of the district commander I have inspected buildings at Silay, offered for hospital purposes, but found them totally inadequate and unfit for such purposes. No other buildings in Bacolod large enough and appropriate for a hospital can be found except at an exorbitant rent. One building, the property of Señor Gonzaga, is large enough and in excellent condition for a hospital, but he asks $250 per month rent for it. A smaller building at Silay, the property of Señor De La Rama, is offered at $300 per month. Buildings for any purpose in Bacolod are very hard to procure and only at exorbitant rates, due to the influx of hacienda owners from the neighboring country into Bacolod to escape the disturbed condition of affairs in the country. The hospital has had such minor repairs as involved no expense, made to it by me, from time to time as necessary, and has at all times been kept scrupulously clean.

Bacolod until recently supplied all subposts on the island of Negros with their medical supplies. At present most of these subposts make direct requisitions on Iloilo. In an emergency subposts are still supplied from here.

Members of the Hospital Corps are sent from here to the subposts as required. A very large part of the time of medical officers and hospital corps men is taken up outside of their military duties in looking after the general sanitation of the pueblos.

### REPORT ON THE POST HOSPITAL AT CEBU, ISLAND OF CEBU, MADE TO THE CHIEF SURGEON, DEPARTMENT OF THE VISAYAS, MAY 1, 1900, BY MAJ. HENRY C. FISHER, SURGEON, UNITED STATES VOLUNTEERS.

The hospital building is situated upon the Plaza de Legaspi, opposite the Cuartel del Infanteria. It is an old building, formerly occupied by the Recolleto monks as a "convent." Only a portion of the second story is used as a hospital, the chapel being used for its original purpose and the lower floor as quartermaster's and private storerooms. The building is old and in a poor state of repair, with leaky roofs. However, it answers the purpose as a temporary hospital fairly well, and the patients are comfortably cared for.

Hospital accommodation is provided here for the garrison of the post and for the severer type of cases from the smaller stations of this and adjacent islands. This hospital has also been serving as a subsupply depot for these places. At present there are 72 beds, but more have been asked for, so that 100 patients may be accommodated.

As a rule there have been sufficient supplies furnished, a notable exception being a deficiency in the supply of quinine last February and March, when there was a great increase in the prevalence of malarial fever.

Fresh milk is not obtainable, but malted milk and the various canned milks have proved very fair substitutes. It is hoped that soon the Australian canned milk may be obtained, as I have been asking for it since last January. Fresh eggs and other foods can be procured, and the hospital is able to set an excellent table upon the 40 cents allowed by the commissary.

The water supply is from shallow wells, and is boiled before being used. It is expected that soon the distilling apparatus now being erected will supply the hospital and the garrison with excellent water. An ice plant for the hospital is in course of erection.

The principal diseases have been malarial fevers, diseases of the skin, venereal diseases, dysentery, and diarrheal disorders. There have been few cases of typhoid fever.

At present I have as an assistant Acting Asst. Surg. J. F. Jones, United States Army. There are 1 hospital steward, 1 acting hospital steward, and 23 privates on duty with the hospital. Of this number there are usually several sick, and details have to be made for detached service.

### REPORT ON THE POST HOSPITAL AT CAPIZ, PANAY, MADE BY LIEUT. IRVING W. RAND, ASSISTANT SURGEON, UNITED STATES ARMY, TO THE CHIEF SURGEON, DEPARTMENT OF THE VISAYAS, MAY 5, 1900.

Shortly after the entrance of the troops into this town the quartermaster provided for hospital use a building which is fairly well suited to its purpose—as much so as any in the place.

It faces the river, which is but a few feet distant. It is a two-story building, somewhat out of repair, but with no serious defect. The lower story is used for storerooms and the dispensary. It also has two rooms, dark, damp, and unsuited for use except as lumber rooms or workrooms for natives. In one of these two rooms wounded native prisoners are now confined. Attached to the lower story is the stable, in which are situated the earth closets for the corps and convalescents.

The upper story consists of two airy rooms, 27 by 20 feet, with narrow balcony overlooking the street. These are used as wards. Other smaller rooms are used as squad rooms, operating room, storeroom for patients' effects, lavatories, kitchen, pantries, etc.

A third of the house is guttered, converging to a small tank, 4 by 4 by 4 feet, in the courtyard. An additional tank has been requested. There is also in the yard a well, which has been cleaned, but its water has not been used. The water from a well at the convent has supplemented rain water when needed.

The working of the hospital has from time to time differed in relation to the force available for use there and also in relation to the supplies available.

When the campaign opened, at the commencement of dry weather, in November last, the transportation available for the medical department of each battalion was a portion of the battalion headquarters' bull cart, drawn by one bull. In these the indispensable medical and surgical supplies were taken, and the few forms and blanks required. Everything else was stored in the quartermaster's storehouse in Jaro. At the close of the operations around Pavia and Santa Barbara expeditionary movements of from two to three days' duration were made into the country from the steamer *Elcano* until Capiz was reached, where Companies A and B, of the First Battalion, disembarked December 15, 1899, and Companies C and D went on to Romblon. The supplies now on hand consisted merely of what remained of the small stock taken with us on the campaign. Those stored at Jaro did not reach us until February 1, 1900.

On arriving at Capiz there were 2 acting stewards (1 sick with typhoid fever) and 5 privates.

Within the next three weeks 3 companies were detached, with a hospital corps man each, leaving 2 men and 2 acting stewards (1 still sick with typhoid). At this juncture 2 men were detailed from the companies for service with the corps, and the work of the hospital went on. At the time the companies were detached the surgeon requested that another medical officer and 6 hospital corps men be sent for duty in the district. An officer and 4 men were received, but the officer and 2 of the men had to be sent to Dao, leaving at Capiz 4 hospital corps men and the 2 men detailed from the companies.

Somewhat later the 2 detailed men were transferred to the corps and later assigned to duty here. At the present time there are for duty here 2 acting stewards, 1 cook, 1 day nurse, and 1 night nurse. Of the rest of the corps 1 is sick, 1 in the guardhouse, and 1 with Company L, Tenth Infantry, on detached service. This condition leaves the hospital chronically short-handed.

The senior acting steward attends sick call, notes treatment and disposition of cases, prepares morning and other reports, and exercises a general care over the hospital. The junior acting steward fills the prescriptions, dispenses medicine, and cares for the native sick prisoners. The cook attends to his specific duties and does inside police. The day nurse cares for his patients and polices the wards and hall. The night nurse's duties are limited as a rule to his night work. The rears are cleaned by the prisoners, and when necessary water is hauled by them. Prisoners are also painting the interior of the building. The hospital washing is done by a native of Capiz, and is paid for on vouchers by the medical department. The expenditure for ice for the hospital has as yet not been authorized, although urgently needed.

Of the six cases of typhoid which have been treated at this point by the surgeon, two cases, those of Acting Steward W. C. Moulton and Private Francis W. Philipps (report of December, 1899, diagnosed as malarial fever continued, but in January, 1900, was clearly typhoid) were contracted on the steamer *Elcano*, or during the campaign in the interior; that of Private Connelly was contracted while in General Hughes's column, crossing the island, and that of Privates Reed, Hansen, and Barnes, from Dumarao, or its neighborhood, as all three were sent in from there. None originated in Capiz. These cases have been of medium severity, with fever not ranging above 104°. Private Hansen, while in the third week of the disease, developed gangrenous stomatitis, or noma, and died ten days afterwards.

## THE DIVISION OF CUBA.

### HEALTH OF THE TROOPS.

In Cuba during the year 1899 the sick and death rates were in marked contrast to those of the previous year. In 1898 the troops were exposed to all the dangers of active service, to excessive fatigues, under exposure to tropical heat and heavy rainfalls, to sleeping without shelter and in wet clothes in the most malarious localities, and to the infection of yellow fever. In 1899 they were comfortably housed in barrack buildings constructed specially for them, or in Spanish barracks, which had been carefully disinfected and repaired for use. These barracks were on high and well-drained grounds, and some distance from neighboring towns, as a protection from infectious diseases. Attention was given to sewage disposal and the general police of the camps, to the supply of a pure water for potable and kitchen purposes, to the issue of a suitable ration, the careful preparation of the dietary, and the selection of appropriate clothing. Under these conditions of garrison life it was to be expected that the mortality rate would be small compared with that of the previous year. There is no doubt, however, that if our troops in Cuba were to be called upon for active service they would again fall victims to the exposures incidental to such service in this island.

In Cuba during the year 1898, with a mean strength, volunteers and regulars, of 8,345, the admissions to sick report were equivalent to 3,413.54 per thousand men, and the death rate from all causes to 91.55 per thousand. Injuries contributed 265.43 to the rate of admission and 23.61 to the death rate, and gunshot injuries 163.68 and 21.69, respectively. Malarial infections constituted by far the largest proportion of the cases, 1,924.74 per thousand men, and contributed 14.02 to the death rate. But typhoid fever and yellow fever gave higher death rates: Six hundred and fifty-four cases of the former, with 154 deaths, gave 78.36 as the rate of admission and 18.45 as that of mortality; and 1,128 cases of the latter, with 139 deaths, gave the respective rates of 135.16 and 16.66. Diarrheal diseases contributed 335.05 to the rate of admission and 9.23 to the death rate. One case of smallpox, not fatal, was recorded.

In 1899, with a mean strength, regulars and volunteers, of 200.51 officers and men, the admission rate was 2,749.74, but the death rate was only 18.30 per thousand of strength. Injuries contributed 211.76 to the admission rate, but only 1.94 to the death rate, and gunshot injuries only 2.99 and 0.80 to these respective rates. Malarial fevers, as in the preceding year, contributed the largest proportion, 1,098.46, of the admission rate, but caused only 2.50 deaths per thousand men, as compared with 14.02. Seven hundred and ninety cases of typhoid fever, with 88 deaths, gave an admission rate of 39.40—only one-half of that of the preceding year—and a death rate of 4.39—only one-fourth of that of the preceding year—while 247 cases of yellow fever, with 48 deaths, gave the respective rates of 12.32 and 2.39 per thousand of strength, as compared with the much larger rates, 135.16 and 16.66, due to the exposures of the year 1898. Diarrheal diseases increased in recorded prevalence during this year to 434.35 per thousand of strength, but diminished in gravity, as shown by a reduction of the death rate from 9.23 to 1.45. One fatal case of smallpox was reported during the year.

## SEASONAL PREVALENCE OF DISEASE.

In Cuba the mean monthly rate of admission to sick report from the army as a whole, regulars and volunteers, in 1899, was 211.41 per thousand of strength. During the early months of the year the rate was slightly below the mean; in May it dropped to a minimum of 116.24. In November and December it was also below the mean; but in July, August, September, and October it was above the mean, the maximum, 266.31, having occurred in August. Malarial fevers were chiefly responsible for the increased rates of these months.

The monthly death rate for the year was 1.36 per thousand of strength. It was above this from April to August, inclusive, the maximum having been 2.91 in July, due to 2.28 from yellow fever. The minimum was 0.54 in November. The following table illustrates the seasonal movement of certain diseases:

| | January. | | | | February. | | | | March. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 78 | 2.02 | 8 | 0.21 | 137 | 3.14 | 14 | 0.32 | 144 | 3.60 | 21 | 0.52 |
| Yellow fever | 4 | .10 | 1 | .03 | 3 | .07 | .... | .... | 1 | .02 | .... | .... |
| Malarial infections | 3,801 | 98.65 | 8 | .21 | 3,658 | 83.87 | 15 | .34 | 3,816 | 95.29 | 6 | .15 |
| Undetermined fevers | 60 | 1.56 | .... | .... | 80 | 1.83 | .... | .... | 168 | 4.20 | .... | .... |
| Rheumatic affections | 220 | 5.71 | .... | .... | 274 | 6.28 | .... | .... | 243 | 6.07 | .... | .... |
| Consumption | 21 | .55 | 2 | .05 | 14 | .32 | 3 | .07 | 11 | .27 | .... | .... |
| All venereal diseases | 382 | 9.91 | .... | .... | 436 | 10.00 | 1 | .02 | 404 | 10.09 | .... | .... |
| Alcoholism and direct results | 30 | .78 | 1 | .03 | 44 | 1.01 | 1 | .02 | 71 | 1.77 | 2 | .05 |
| Diarrheal diseases | 1,066 | 27.66 | 3 | .08 | 1,658 | 38.02 | 3 | .07 | 1,354 | 33.81 | 7 | .17 |
| Pneumonia | 25 | .65 | 6 | .16 | 23 | .53 | 5 | .11 | 5 | .12 | 1 | .02 |
| Total respiratory | 393 | 10.20 | 6 | .16 | 422 | 9.68 | 6 | .14 | 341 | 8.52 | 1 | .02 |
| All diseases | 7,933 | 205.89 | 44 | 1.14 | 8,676 | 198.93 | 53 | 1.22 | 8,302 | 207.31 | 45 | 1.12 |

| | April. | | | | May. | | | | June. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 153 | 7.26 | 14 | 0.66 | 75 | 5.45 | 10 | 0.73 | 46 | 3.56 | 4 | 0.31 |
| Yellow fever | .... | .... | .... | .... | 3 | .22 | .... | .... | 80 | 6.19 | 13 | 1.01 |
| Malarial infections | 1,787 | 84.81 | 5 | .24 | 964 | 70.08 | 3 | .22 | 1,075 | 83.22 | 2 | .15 |
| Undetermined fevers | 41 | 1.95 | .... | .... | 26 | 1.89 | .... | .... | 19 | 1.47 | .... | .... |
| Rheumatic affections | 108 | 5.13 | .... | .... | 70 | 5.09 | .... | .... | 71 | 5.49 | .... | .... |
| Consumption | 5 | .24 | 1 | .05 | 8 | .58 | 1 | .07 | 2 | .15 | .... | .... |
| All venereal diseases | 225 | 10.68 | .... | .... | 216 | 15.70 | .... | .... | 191 | 14.79 | .... | .... |
| Alcoholism and direct results | 55 | 2.61 | .... | .... | 32 | 2.33 | .... | .... | 34 | 2.63 | .... | .... |
| Diarrheal diseases | 782 | 37.11 | 2 | .10 | 736 | 53.50 | 8 | .58 | 682 | 52.79 | 1 | .08 |
| Pneumonia | 10 | .47 | 3 | .14 | 7 | .51 | 3 | .22 | 1 | .08 | .... | .... |
| Total respiratory | 169 | 8.02 | 3 | .14 | 106 | 7.71 | 3 | .22 | 46 | 3.56 | .... | .... |
| All diseases | 4,085 | 193.88 | 30 | 1.42 | 3,005 | 116.24 | 31 | 2.25 | 2,914 | 225.59 | 27 | 2.09 |

| | July. | | | | August. | | | | September. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 46 | 3.61 | 2 | 0.16 | 40 | 3.19 | 4 | 0.32 | 27 | 2.21 | 2 | 0.16 |
| Yellow fever | 100 | 7.86 | 29 | 2.28 | 31 | 2.48 | 1 | .08 | 17 | 1.39 | 4 | .33 |
| Malarial infections | 1,239 | 97.31 | 2 | .16 | 1,395 | 111.40 | 3 | .24 | 1,217 | 99.44 | 2 | .16 |
| Undetermined fevers | 30 | 2.36 | .... | .... | 52 | 4.15 | .... | .... | 76 | 6.21 | .... | .... |
| Rheumatic affections | 65 | 5.11 | .... | .... | 78 | 6.23 | .... | .... | 58 | 4.74 | .... | .... |
| Consumption | 7 | .55 | .... | .... | 10 | .80 | .... | .... | 3 | .25 | .... | .... |
| All venereal diseases | 201 | 15.80 | .... | .... | 191 | 15.25 | .... | .... | 191 | 15.61 | .... | .... |
| Alcoholism and direct results | 62 | 4.87 | 1 | .08 | 56 | 4.47 | 3 | .24 | 23 | 1.88 | .... | .... |
| Diarrheal diseases | 607 | 47.68 | .... | .... | 587 | 46.87 | 1 | .08 | 383 | 31.29 | 1 | .08 |
| Pneumonia | 4 | .31 | .... | .... | .... | .... | 1 | .08 | 2 | .16 | .... | .... |
| Total respiratory | 60 | 4.71 | .... | .... | 79 | 6.31 | 1 | .08 | 45 | 3.68 | .... | .... |
| All diseases | 3,158 | 248.04 | 37 | 2.91 | 3,335 | 266.31 | 18 | 1.44 | 2,627 | 214.64 | 15 | 1.23 |

| | October. | | | | November. | | | | December. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 14 | 1.26 | 2 | 0.18 | 14 | 1.26 | 2 | 0.18 | 16 | 1.46 | 2 | 0.18 |
| Yellow fever | 4 | .36 | 2 | .18 | 2 | .18 | .... | .... | 2 | .18 | 1 | .09 |
| Malarial infections | 1,357 | 121.69 | 3 | .27 | 1,049 | 94.49 | .... | .... | 667 | 61.00 | 1 | .09 |
| Undetermined fevers | 195 | 17.49 | .... | .... | 71 | 6.40 | .... | .... | 19 | 1.74 | .... | .... |
| Rheumatic affections | 79 | 7.08 | .... | .... | 58 | 5.22 | .... | .... | 45 | 4.12 | .... | .... |
| Consumption | 3 | .27 | .... | .... | .... | .... | .... | .... | 6 | .55 | 1 | .09 |
| All venereal diseases | 190 | 17.04 | .... | .... | 160 | 14.41 | .... | .... | 198 | 18.10 | .... | .... |
| Alcoholism and direct results | 45 | 4.04 | .... | .... | 50 | 4.50 | 1 | .09 | 26 | 2.38 | .... | .... |
| Diarrheal diseases | 350 | 31.39 | 1 | .09 | 279 | 25.13 | 1 | .09 | 225 | 20.58 | 1 | .09 |
| Pneumonia | .... | .... | .... | .... | 1 | .09 | 1 | .09 | 1 | .09 | .... | .... |
| Total respiratory | 50 | 4.50 | 1 | .09 | 57 | 5.13 | 1 | .09 | 53 | 4.85 | 1 | .09 |
| All diseases | 2,887 | 258.91 | 10 | .90 | 2,243 | 202.04 | 6 | .54 | 1,724 | 157.68 | 12 | 1.10 |

## YELLOW FEVER.

There is now no general military hospital in the Division of Cuba, but there are several post hospitals which by their capacity, accommodations, and the efficiency of their staffs are able to receive and care for all cases requiring special treatment.

Each of the posts has a well-equipped hospital provided with isolation wards for yellow fever and detention wards for all fevers of a suspicious character, until their nature has been satisfactorily determined. Thus each post is prepared to take care of its own yellow-fever patients. Each command is also prepared to move out of its quarters to selected grounds in case of the appearance of yellow-fever infection in its barracks.

During the fiscal year ended June 30, 1900, six outbreaks of yellow fever occurred involving our troops. The disease appeared first at Santiago, beginning in June, 1899, and continuing until October 15; 12 officers and 129 enlisted men became affected, of whom 5 officers and 26 enlisted men died. The report of this outbreak by Maj. L. C. Carr, surgeon, United States Volunteers, was submitted in my last annual report, page 251. The failure of the troops to move promptly from their infected quarters was the cause of this large death record in this garrison. Cases which occurred in July and August, 1899, in Puerto Principe and Cabana Fortress, Havana, also are recorded in my last annual report, page 261.

On March 5, 1900, the chief surgeon of the Department of Santiago and Puerto Principe caused the following circular to be issued for the guidance of the medical officers in his department:

CIRCULAR } HDQRS. DEPARTMENT OF SANTIAGO AND PUERTO PRINCIPE,
No. 2. } *Santiago, Cuba, March 5, 1900.*

[Prepared by the chief surgeon.]

In order to guard against the introduction and spread of yellow fever in this department, commanding officers, besides the provisions of Circular No. 22, of December 21, 1899, will, on April 1, 1900, or as soon thereafter as practicable, carry out the following special instructions. For this purpose they will direct their medical officers to seek the cooperation of the officers of the Marine-Hospital Service, and avail themselves of such hospital accommodations or disinfecting plants as may be offered by said service:

First. In all garrison towns and their seaports a census will be made of all nonimmune persons, so that the extent of susceptibility to infection may be known and adequate preparations made. Such census will naturally include all persons, not native, who have never had the disease.

Second. In seaboard towns especially, homeless and destitute nonimmunes (mostly loafers and tramps) are the most dangerous element of the population, and will, so far as practicable, be removed to the country, isolated, or placed in confinement under medical supervision.

Third. If a suitable building is not available, a sufficient number of tents will be pitched in an isolated spot and made ready for the admission and treatment of yellow-fever cases. Near this hospital, but not connected with it, should be another set of tents (detention camp) for the reception of all suspicious cases or cases coming from an infected locality.

The tentage will be furnished by the Quartermaster's Department, and the furniture, supplies, and medicines by the Medical Department.

Fourth. The necessary personnel will be selected and in readiness. In the absence of an army medical officer the commanding officer will make an agreement with the best civilian physician available, who will be prepared to take charge of the yellow-fever hospital on the day the first case breaks out, his compensation to begin from that day in accordance with contract to be made with him by the chief surgeon.

One immune attendant will be engaged and placed in charge as soon as the hospital is ready, at $30 per month and a ration, his pay to begin at once. If cases of yellow fever occur the chief surgeon will authorize as many nurses and attendants as may be necessary.

Fifth. Upon completion of the preparations prescribed in the above paragraphs, a report describing the names of persons selected or engaged and other action taken in carrying out the provisions of this circular will be forwarded to these headquarters.

Sixth. Civilians under treatment will be charged $1 a day, or only 50 cents if employees of the Government. If unable to pay, bills in duplicate may be sent to the chief surgeon for settlement.

Ice for the sick and lime for disinfection can be purchased by medical officers as already provided by the chief surgeon.

Seventh. All buildings known to have been infected in previous years will be carefully inspected, and, if deemed necessary, subjected to a fresh disinfection.

Eighth. Where no steam plant is available, disinfection of bedding and clothing may be effected by a small portable formaldehyde generator, or by thorough boiling in a mild sublimate solution, followed by complete exposure to sunshine. A hand pump, to throw a stream of sublimate solution against walls, floors, ceilings, etc., is always very useful, and will be supplied on application to the chief surgeon.

Ninth. All persons coming from infected localities will be kept isolated for five days at the detention camp and disinfected before being discharged.

Tenth. Cases of fever in nonimmunes should be carefully watched, and as soon as they become suspicious promptly removed to the detention camp.

All physicians will be ordered to report within twenty-four hours any suspicious cases under their care to the medical officer in charge.

All cases of yellow fever will be promptly wired to the chief surgeon.

Eleventh. According to general experience, the three most important symptoms upon which a diagnosis of yellow fever may be based in the first stage are:

(1) Injection and glistening of conjunctivæ, together with general congestion of the skin.

(2) Steadiness or falling of pulse, with rising temperature.

(3) Albumen in urine.

In order to appreciate properly the indications of pulse and temperature, they should be recorded not less than three times a day upon the usual chart. Such a chart should by itself by the end of the first week clear all doubts as to the nature of the fever.

By order of Colonel Whitside:

J. G. HARBORD,
*First Lieutenant, Tenth U. S. Cavalry, A. A. D. C., A. A. A. G.*

### REGISTRATION OF NONIMMUNES.

Later, on July 3, 1900, on the recommendation of Maj. F. J. Ives, surgeon, United States Volunteers, chief surgeon of the Department of Matanzas and Santa Clara, the following circular concerning the registration of nonimmunes was published as a precautionary measure against the spread of yellow fever:

1. The mayors of the following cities, Matanzas, Cardenas, Colon, Cienfuegos, Santa Clara, Trinidad, Sancti Spiritus, Sagua la Grande, Caibarien, Placetas, and Remedios, should be required at once to prepare a list of all nonimmunes, exclusive of the officers and soldiers of the United States Army, but including the families of the above, and all civilian employees. In order to obtain this list a proclamation should be issued by the mayor requiring every nonimmune to be registered, stating in each case the full name and address, and whether an adult or child, all persons over 16 years being considered adults. In this proclamation the necessary measures for securing this information should be embodied. It should be clearly stated that any adult failing to comply and be registered at the end of ten days after the date of the order, would be fined at least $1 for every day that he or she remains unregistered, and the parent or guardian of any child will be fined an equal amount for all children not registered, in the same manner and amount as above.

The term immune should be construed to mean all natives of the island of Cuba, all foreigners who can establish a residence of at least ten years on the island, and all others who can produce a certificate from a reliable physician that they have had yellow fever. The term nonimmune signifies any person who is not immune as above described.

The proclamation should be written in both Spanish and English and conspicuously posted on the bulletin boards in front of each alcaldia. In addition it should also be advertised in the local papers.

2. Should yellow fever appear in any of the towns of this department to an extent sufficient to create apprehension of its being exported, the chief sanitary officer of the department will notify the mayor of the infected town to permit no nonimmune to leave the town without previously notifying the mayor, in writing, of the date of such departure and the destination. The mayor, upon being thus notified, will at once notify by telegraph the mayor of the town to which the nonimmune is going. The latter mayor will, upon the arrival of the nonimmune, ascertain his address and cause his chief sanitary officer, or one of the municipal physicians, to investigate the case and keep the case under observation until the period of infection has passed. Should the nonimmune be an officer or a soldier, or a member of the family of an officer or soldier, the commanding officer of the garrison from which he leaves should be required to notify the commanding officer of the garrison in the town where the nonimmune is going, and the military surgeons be required to take the necessary precautions. Should a nonimmune of the latter class be going to a town where there is no garrison, the commanding officer will notify the mayor of such town, who will take the same measures as in the case of those not connected with the military establishment. Should any nonimmune arrive from an infected town at any of the seaport towns, the quarantine officers of the port should be at once notified of that fact by the local municipal authorities, or by the military authorities in case of an officer or soldier or a member of the family of an officer or soldier.

There should likewise be a punishment for all nonimmunes failing to give the proper notifications to the municipal authorities, consisting of appropriate fines, or imprisonment, or both.

Notwithstanding the precautions taken an outbreak occurred at Santa Clara on May 10, 1900, which continued until the garrison moved into camp. Thirty-six officers and men became affected, of whom 10 died.

On May 19, 1900, an outbreak took place at Quemados, the headquarters of the Department of Havana and Pinar del Rio. Eleven officers and men were taken sick and two died. The infection did not reach the large post of Columbia Barracks, only half a mile distant. The chief surgeon of the department recommended as a measure for the suppression of the epidemic the removal of the nonimmunes of the village of Quemados into a camp about 2 miles distant; there were about 140 nonimmunes, of whom 84 were white Americans. This officer, Maj. Jefferson R. Kean, became affected with the disease, but his plans for its suppression were ably perfected and carried out by Capt. A. N. Stark, post surgeon, Columbia Barracks. After the removal of the nonimmunes, saloons, houses of prostitution, and all resorts where one could contract the disease were closed. A rural guard was placed on duty to arrest all soldiers or civilian employees found in the town. It was the intention to keep the nonimmunes in camp until November 15, the saloons and other resorts to be closed indefinitely.

On February 20, 1900, Capt. W. W. Quinton, assistant surgeon, United States Army, post surgeon at Guanajay Barracks, reported a case of yellow fever in the person of a soldier of the First United States Infantry, who was taken sick January 4, 1900, had black vomit on the 9th, and died next day. Post-mortem examination showed that there was no doubt of the character of the case. Every precaution was taken to prevent the spread of the disease and no other case occurred at that time.

Nothing more was heard of yellow fever at this post until July 4, 1900, when another soldier of the First United States Infantry became sick with fever, which, two days later, was recognized as yellow fever.

The patient was transferred to the civil hospital in Guanajay, where death occurred July 9. The disease was believed to have been contracted in the city. On July 20, 2 cases; on the 21st, 3 cases; on the 28th, 2 cases, and on August 7, 3 cases were reported, only 1 of which proved fatal. Meanwhile measures had been taken to prevent the spread of the disease. The barracks and hospital were cleared of all occupancy and disinfected with bichloride solution, the men meanwhile occupying tents at some distance from the infected buildings, and on August 24 Acting Asst. Surg. J. F. Dunshie, post surgeon, reported that no case had occurred in the command since August 7.

Lastly, at Pinar del Rio Barracks a sergeant of the First Infantry was taken sick May 10 and died on the 16th with what was recorded as pernicious malarial fever. Another case was reported June 14, and 4 others were taken on sick report during the remainder of the month. Only 1 of these 5 cases recovered. Twenty-seven men, 4 of whom were civilians, became affected in July; 8 of these died. The epidemic was suppressed by the removal of the troops into camp about 3 miles from the barracks. Only 2 cases occurred in the command after the infected barracks were abandoned. This move should have been made much earlier.

### MUNICIPAL SANITATION.

During the year the medical officers serving in the Division of Cuba attended not only to their proper military work at their respective posts, but most of them discharged duties of a responsible character in connection with the sanitation of cities and towns. In Havana the work of sanitation has been carried on with much vigor, especially as regards the cleaning of streets, privies, and the interior of houses; but, according to Chief Surgeon Havard, the best results can not be expected until a new system of sewerage has been laid.

The following table, compiled by Maj. W. C. Gorgas, surgeon, United States Army, chief sanitary officer of the city of Havana, shows the mortality from yellow fever for citizens and soldiers, by months, from January, 1890, to May 31, 1900. From it may be seen the great mortality among the nonimmune Spanish soldiers sent from the Peninsula in 1896 and 1897 to suppress the Cuban insurrection. In 1896 there were 1,153 deaths of soldiers and only 135 of civilians; in 1897, 813 of soldiers and only 45 of civilians; in 1898, 111 soldiers and only 25 civilians died, the conditions during this year preventing the ingress of persons susceptible to the disease. The civilian deaths during these years were few as compared with the losses suffered by the Spanish troops. But in 1899, during the occupation of the city by United States troops, this relative mortality was reversed; 92 civilians died of yellow fever and only 11 soldiers, although up to the time the volunteers left there were over 20,000 troops in and about the city. This is creditable to the care taken by our medical officers.

The great fatality of yellow fever among the Spanish troops was the result of apathy, or a want of knowledge on the part of their medical officers of methods of prophylaxis. Their garrisons appear to have been left to suffer until the disease had spent itself by affecting all who were susceptible to its influence. The method of moving the troops from the infected locality, so successfully carried out by our medical officers under instructions from this office, does not seem to have been practiced by the Spanish authorities.

*Deaths from yellow fever in the city of Havana.*

| Months. | 1890. Military. | 1890. Civilians. | 1891. Military. | 1891. Civilians. | 1892. Military. | 1892. Civilians. | 1893. Military. | 1893. Civilians. | 1894. Military. | 1894. Civilians. | 1895. Military. | 1895. Civilians. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| January | 2 | [illegible] | 4 | 4 | 9 | 6 | [illegible] | 14 | 3 | 4 | 4 | 11 |
| February | 2 | 2 | [illegible] | 3 | 4 | 6 | 3 | 6 | 4 | 0 | [illegible] | 3 |
| March | [illegible] | [illegible] | 3 | [illegible] | [illegible] | [illegible] | 2 | 2 | 2 | 0 | [illegible] | 1 |
| April | 7 | 4 | 1 | 4 | 3 | 5 | 6 | 2 | 1 | 3 | 1 | 5 |
| May | 14 | 3 | [illegible] | 4 | [illegible] | 6 | 19 | 4 | 15 | 0 | 0 | 10 |
| June | 29 | 17 | 29 | 12 | [illegible] | 29 | 17 | 52 | 27 | 4 | 1 | 15 |
| July | 34 | [illegible] | 56 | 19 | 9 | 18 | 46 | 78 | 65 | 12 | [illegible] | 81 |
| August | [illegible] | [illegible] | 44 | 22 | 20 | 47 | 19 | 91 | 47 | 26 | 34 | 96 |
| September | [illegible] | 30 | 30 | 26 | 16 | 54 | 11 | 57 | 33 | 43 | 42 | 98 |
| October | 9 | 22 | 22 | 25 | 20 | 34 | 10 | 36 | 9 | 31 | 39 | 63 |
| November | 6 | 9 | 10 | 14 | 13 | 39 | 3 | 25 | 3 | 20 | 13 | 22 |
| December | 3 | 6 | 7 | 10 | 5 | 28 | 3 | 8 | 6 | 23 | 15 | 5 |
| Total | 156 | 152 | 220 | 136 | 104 | 253 | 131 | 365 | 216 | 166 | 158 | 395 |
| Grand total | 308 | | 356 | | 357 | | 496 | | 382 | | 553 | |

| Months. | 1896. Military. | 1896. Civilians. | 1897. Military. | 1897. Civilians. | 1898. Military. | 1898. Civilians. | 1899. Military. | 1899. Civilians. | 1900. Military. | 1900. Civilians. |
|---|---|---|---|---|---|---|---|---|---|---|
| January | 6 | 4 | 69 | 0 | 4 | 3 | 0 | 1 | 0 | 8 |
| February | 7 | 0 | 24 | 0 | 1 | 0 | 0 | 0 | 0 | 9 |
| March | 3 | 0 | 29 | 1 | 2 | 0 | 0 | 1 | 0 | 4 |
| April | 12 | 2 | 70 | 1 | 1 | 0 | 0 | 2 | 0 | 0 |
| May | 26 | 7 | 85 | 3 | 4 | 0 | 0 | 0 | 0 | 2 |
| June | 42 | 4 | 171 | 3 | 2 | 1 | 1 | 0 | ...... | ...... |
| July | 103 | 13 | 162 | 6 | 14 | 2 | 0 | 2 | ...... | ...... |
| August | 229 | 33 | 96 | 7 | 13 | 3 | 4 | 9 | ...... | ...... |
| September | 142 | 24 | 48 | 8 | 29 | 5 | 5 | 13 | ...... | ...... |
| October | 211 | 29 | 33 | 9 | 24 | 2 | 1 | 24 | ...... | ...... |
| November | 230 | 14 | 22 | 4 | 8 | 5 | 0 | 18 | ...... | ...... |
| December | 142 | 5 | 5 | 3 | 9 | 4 | 0 | 22 | ...... | ...... |
| Total | 1,153 | 135 | 813 | 45 | 111 | 25 | 11 | 92 | ...... | ...... |
| Grand total | 1,288 | | 858 | | 136 | | 103 | | .............. | |

## REPORT OF MAJ. VALERY HAVARD, SURGEON, UNITED STATES ARMY, CHIEF SURGEON DIVISION OF CUBA, DATED AT HAVANA, CUBA, JULY 10, 1900.

I have the honor to submit the following report for the year ending June 30, 1900:

I was relieved from duty as chief surgeon, Department of Santiago and Puerto Principe, and directed to proceed to Havana and report to the commanding general Division of Cuba, for duty as chief surgeon of that division, by Special Orders No. 77, Adjutant-General's Office, April 2, 1900. I arrived at Havana and reported as ordered on April 23, 1900.

My predecessors in this office were Lieut. Col. R. M. O'Reilly, from January, 1899, to November, 1899, and Lieut. Col. Calvin De Witt, from January, 1900, to April, 1900.

At the time I took charge the general military hospitals, which after extensive and expensive repairs had been occupied by our numerous sick during the first year of the intervention, had become unnecessary and had already been turned over to the civil authorities. Although there is now no general hospital in the division, the departments have one or more post hospitals, which by their capacity, accommodations, and the efficiency of their staff are able to receive cases requiring special treatment.

During the year medical officers not only attended to their proper military work at their respective posts, but the great majority of them discharged other duties, often of an arduous nature, in connection with the sanitation of cities and towns and the management of civil hospitals. The department chief surgeons especially have been obliged to give these civil matters a large portion of their time and often the closest attention. Sanitation is such a modern science and has been so utterly neglected in Cuba that the progress of the education of the native profession and laity in that direction is necessarily slow, but not discouraging, and the results of this education will not be one of the least benefits of the intervention.

*Yellow fever.*—In view of the approaching yellow-fever season, one of my first cares was to verify the precautions taken and preparations made to avoid the contagion, and if cases occurred to isolate and treat them. These matters have been carefully attended to by the department chief surgeons. Each post is required to have a detention ward (where all cases of fever are admitted and kept until their nature is determined) and isolation wards.

Our largest posts consist of new frame structures, erected on high grounds, at some distance from neighboring towns, and therefore affording not only every hygienic advantage but also entirely free from the contagion of yellow fever and easily kept so.

A few of the old Spanish barracks are still occupied—as, for instance, at Pinar del Rio, Matanzas, Cardenas, etc. These barracks are not only dangerous in themselves, but being in towns they easily become infected or reinfected, as was shown at Santa Clara.

Each important post is prepared to take care of its own yellow-fever patients. As there is no garrison in the city of Havana, the rare cases which might occur at the Pirotecnia or at posts No. 4 or 5 can safely be taken care of at the regimental hospital of the Second Artillery, or at Las Animas hospital, while those which may occur on the east side of the bay will be admitted at the Cabana field hospital.

For all Americans, Government employees or others, who may contract the disease a ward has been fitted out at Las Animas hospital, where they are attended by English-speaking physicians and American trained nurses.

Spaniards who have immigrated during the past year, who now furnish and will continue to furnish the great majority of yellow-fever cases in Havana, are taken to the hospitals of the several mutual beneficial associations to which they belong. These hospitals are in the suburbs of the city and provided with contagious-disease wards more or less isolated. It would be a much more satisfactory plan to send all cases to Las Animas hospital, which is especially intended for yellow fever, but such a plan could not be carried out without doing violence to the habits and feelings of the patients and their friends, and it seems best at present to insist on the strict isolation and disinfection of the wards where such patients are received.

During the fiscal year ending June 30, 1900, there have been three outbreaks of yellow fever in Cuba, all involving our troops, more or less.

The first was at Santiago de Cuba, beginning in June, 1899, and continuing through the summer, or until no susceptible material remained within reach; 138 officers and enlisted men were taken sick and 30 died.

The second was at Santa Clara, beginning on May 10, 1900, and continuing through June, or until the garrison had been moved into camp and thoroughly disinfected; 36 officers and enlisted men were taken sick and 10 died. In this outbreak only soldiers and quartermaster's employees suffered, the exemption of citizens showing how completely they were immunized by the virulent epidemic which decimated the town in 1898. The outbreak originated in one or two houses close to the barracks, where several patients had died in 1898. Nonimmunes had occupied these houses in 1899 with impunity.

The third was at Quemados, the headquarters of the Department of Havana and Pinar del Rio, beginning on May 19, 1900, and continuing in June until all nonimmunes had been driven out of town; 11 officers and enlisted men were taken sick and 2 died. It has been attempted to connect this outbreak with that of Santa Clara, but as the two persons (man and wife) who form the connecting link came from that town to Quemados on April 1, and did not develop the disease until May 19, the demonstration is far from complete. It is also almost certain that a case of yellow fever died at Quemados last March, on General Lee street, thus showing previous infection.

The presence of a garrison of 2,000 or more men within a mile of Quemados was naturally a subject of great anxiety, but thanks to the very energetic measures recommended by Maj. J. R. Kean, chief surgeon, and (after he was taken sick) by his able successor, Capt. A. N. Stark, the contagion did not reach any portion of the post.

Our increased experience with yellow fever has shown us there is much about the nature, development, and communicability of the contagium of which we are ignorant. The laws governing this disease have not yet been discovered. It continues to strike when and where it listeth, regardless of our most reasonable expectations and best hygienic measures. Why the germ should remain quiescent and inactive one or two seasons in the presence of susceptible material and then suddenly become active and virulent, is a question still unanswered. The outbreak at Santiago last year was attributed, on what appeared good grounds, to the intensely hot and dry spring, while the outbreaks of this year at Santa Clara and Quemados are attributed, on equally good grounds, to the unusually heavy rains which fell in April and May. One thing appears to have been pretty well demonstrated and forms a valuable rule for our guidance; namely, that troops in uninfected buildings a few miles from yellow-fever foci can be saved from infection by simple but very strict precautions.

*Health of troops in Cuba.*—The eastern, middle, and western sections of Cuba offer no peculiarities of climate producing marked effects upon the health of troops. Thus, the total admissions per 1,000 of mean strength are 3,311 for the middle department, 3,299 for the eastern, and 3,066 for the western. The percentage of deaths is greatest in the eastern department and least in the western; this is accounted for by the sharp outbreak of yellow fever in Santiago in the summer of 1899. Malarial fever is everywhere, but most prevalent in the eastern region, diminishing westward, the proportions being 1,423 admissions per 1,000 of mean strength in Santiago and Puerto Principe, 1,126 in Matanzas and Santa Clara, and 576 in Havana and Pinar del Rio. Yellow fever has occurred in the three departments and is just as liable to break out in one as the other, no part of the island enjoying immunity against it.

The total number of deaths among the troops in Cuba during the year was 146, or 15.16 per thousand. In the United States Army during the decade preceding the Spanish-American war it was 6.99 and during the calendar year 1898 (from all causes) 27.55. This mortality of 15.16 per 1,000 is not high if we consider the number of admissions, and shows that of the diseases which incapacitate so many of our men few are dangerous to life. Of these the most dreaded is yellow fever, but the measures taken will almost certainly prevent its occurrence in the future among enlisted men, except as rare sporadic cases, producing but little effect upon the total mortality.

The admissions for typhoid fever per 1,000 of mean strength are 13.73, and the mortality 1.87, while in the United States Army during the calendar year 1898 the rate of admissions was 88.56 and the mortality 9.74. Typhoid fever is very rare among the natives of Cuba. When it attacks our troops it is almost always by imported infection. It should therefore be possible to completely eliminate this disease from the island.

Not a single case of smallpox occurred during the year, and only two of measles.

The total admissions for diarrhea and dysentery per 1,000 of mean strength is 317, and the mortality only 0.73. In the United States during the decade preceding the Spanish-American war the admissions were 107 and the mortality 0.10, but during the calendar year 1898 these figures rose to 304 admissions and 2.14 deaths. Our figures for Cuba show by comparison a very large number of cases with a very low mortality.

The number of cases of venereal diseases throughout this division is very high. I regret to have no figures to show its accurate extent, but it forms by far the largest item of the column of "All other diseases." It is the burden of complaint of most post surgeons that about one-half of their patients are of this class. Of the various measures suggested and applied to mitigate this serious and widespread evil, none appears to have had the decided success which followed that of Maj. F. J. Ives, chief surgeon of Matanzas and Santa Clara, and which will be fully reported on by himself. It consists in subjecting all enlisted men to weekly examination, treating those who show signs of disease and depriving them while under treatment of the pass and canteen privileges; thus not only are all cases early submitted to proper treatment, but prevented from becoming aggravated by fresh exposure or the use of stimulants. This system, at first opposed by officers, has given such excellent results that it now meets with nothing but commendation at the posts where it is in operation.

*Hygiene of posts.*—The examination of the monthly sanitary reports from the posts reveals nothing of much importance. No sanitary defect has been complained of that was not remedied so far as possible. The disposal of garbage and excreta is everywhere receiving particular attention; where sewers are not available, the dry earth and lime system, or milk of lime system with excavator, are used with entire satisfaction. The clothing appears very satisfactory. I believe the campaign hat would be very much improved by an all-round ventilator, as in the helmet. Of the food I can only say that it is what the captain of the company, his first sergeant, and cook choose to make it; the needful materials are amply provided by the ration. It is true that green fresh vegetables are scant and expensive in the markets, but at permanent posts they can be produced abundantly. Man eats less in the Tropics; less fuel is required to keep up animal heat, especially when but little physical energy is expended; but of this reduced quantity of food it is questionable, judging from rather extensive practical observation, whether the relative proportion of meat is less or should be less than in the United States. Of the native fruits all are perfectly wholesome if mature and not overripe, and I have not yet seen any ill effects from eating them, even in large quantity. The soldier coming from the United States does not realize the importance of accommodating his habits to the requirements of a tropical climate by cultivating temperance in eating and drinking, and in this way avoiding the many diarrheal and other troubles from which he suffers. It would be greatly to his advantage were he to imitate the admirable sobriety of the Cubans.

*Havana.*—The work of sanitation in the city of Havana has been carried on with much vigor during the year, especially as regards the cleaning of the streets, privies, and interior of houses; but such work is necessarily imperfect and can not give the best results until a new complete system of sewerage has been laid. Enough has been done, however, to have a decided effect upon public health, especially during the past three months, as shown by the lowering of the death rate to 24 per thousand for the month of May, the last for which the rate has been computed. Maj. W. C. Gorgas, surgeon, United States Army, chief sanitary officer, deserves special commendation for his untiring efforts in the discharge of his manifold duties.

From a very interesting (as yet unpublished) "Note on mortuary record of yellow fever in Havana, 1884–1900," generously placed at my disposal by the author, the well-known yellow-fever expert, Surg. H. R. Carter, of the Marine-Hospital Service, I quote the following extracts:

"The belief that seems prevalent among Americans that it is safe to come to Havana in November and perfectly safe in December, but that they must leave with the early summer, is absolutely without basis. May will average safer than January. In not a few years June is safer than December, and it is fair to class from June to December, inclusive, as a period of danger, and from January to May, inclusive, as comparatively safe, January being the most dangerous month of this division of the year.

* * * * * * *

"What, however, most impressed the writer when he compiled these figures was the small number of deaths among the civilian population, 210.4 per annum being the average for the ten normal years preceding 1895 and 195 per annum for the last seventeen years. We must note, too, that these figures for civilian deaths are somewhat too high, including, as they do, a few soldiers.

"During this time, then, seventeen years, there has never been any death rate among the civilian population even approaching to the epidemics of our own country—compare with 7,800 deaths in New Orleans in 1853. Yellow fever for seventeen years has not been a marked factor in the civil mortality per annum in Havana.

* * * * * * *

"The books in my office show that civilian immigration nearly ceased after 1895 and that it was not resumed until in August, 1899. This is doubtless the reason why 1896, 1897, and 1898 were years of small civilian mortality, while 1896 and 1897 pile up the highest military mortality ever known here: 1896, civil 141, military 1,579; 1897, civil 61, military 1,083.

"In 1898 the bulk of susceptibility among the soldiers must have been exhausted, as a garrison of 29,000 to 30,000 gave only 333 deaths. The same is true of civilians, for whom we record only 31, the lowest number in the history of Havana which we have recorded. Among the deaths in November and December are those of a small number (5, I believe) of Americans who had come to Havana, believing these months to be free from danger.

* * * * * * *

"Up to the end of August the civilian mortality for this year (1899) was extremely small, and for August and September was decidedly less than the normal before the war, although greater than for the two preceding years. Instead of reaching its maximum, however, in August and September, the October mortality nearly doubled its September figure and December's was only 2 less. It suffered a marked change in January, but extended into March, and reached its lowest, 0, in April of this year. May has given us a mortality of only 2.

"The run of the fever in 1899 was very much like that of 1885, both giving exactly the same mortality, 111, the smallest of any in the normal ten years' series. In both there was the fairest promise, until August in 1885, September in 1899, and then an unusually rapid increase, dying down, however, more quickly in 1885 than in 1899. In the latter, indeed, we had a real winter epidemic, as in 1888 and 1892, and with the exception of these two years the three winter months of 1899–1900 give a higher mortality than the corresponding months of any of the seventeen years I have recorded.

* * * * * * *

"To my mind the cause of the increase of mortality in the fall and winter was exactly the same, reversed, as caused the low mortality in 1897 and 1898, i. e., the changed movement of the Spanish immigration. Just as a cessation of this movement after 1895, by ceasing to supply susceptible material, gave us the low death rate (of yellow fever) of 1896, 1897, 1898, and the early part of 1899, so its recrudescence in the latter part of August, by furnishing susceptible material exposed to infection, gave us our winter epidemic of 1899."

One of the most interesting tables in the "note" is that showing the comparative mortality for five years, among civilians, of yellow fever and tuberculosis, the average per annum for yellow fever being 221 cases and for tuberculosis 1,492, so that the author feels justified in remarking that "compared with tuberculosis, the influence of yellow fever on the general mortality of the city is insignificant."

*Stations.*—The number of headquarters, posts, hospitals, and depots on Juue 30 requiring the services of medical officers was as follows:

Headquarters, 4; garrisoned posts, 28; yellow-fever hospitals or stations, 6; supply depots, 2.

Of the garrisoned posts 12 are in the Department of Santiago and Puerto Principe, 9 in the Department of Matanzas and Santa Clara, and 7 in the Department of Havana and Pinar del Rio.

Of the yellow-fever hospitals and stations 1 is at Santa Clara, 1 at Quemados, 1 in Havana, and 4 in the Department of Santiago and Puerto Principe.

Six medical officers are also on special duty as sanitary officers in cities, and in charge of Government employees.

*Medical officers.*—The medical officers on duty in the Division of Cuba on June 30 were as follows:

| | |
|---|---|
| United States Army: | |
| Surgeons with rank of major | 3 |
| Assistant surgeons with rank of captain | 2 |
| Assistant surgeons with rank of first lieutenant | 9 |
| United States Volunteers: | |
| Surgeons with rank of major (2 being captains and assistant surgeons, United States Army) | 8 |
| Acting assistant surgeons | 55 |
| Total | 77 |

This list presents peculiar features which call for notice. The first is the absence of medical officers above the rank of major. Another is the small number of regular medical officers, especially of major-surgeons, so that of the three department chief surgeons two are captains and assistant surgeons, with volunteer rank of major, and one is a major of volunteers.

One of the inevitable results of this scarcity of regular medical officers is that all of our large and important posts are in charge of junior commissioned officers or of contract surgeons; thus the largest post on the island, Columbia Barracks, with a garrison of 2,000 men, is in charge of an assistant surgeon with rank of captain, and so is Pinar del Rio, with a garrison of 800 or more men. Posts of four or five companies, with band and headquarters, like Rowell Barracks, Puerto Principe, Santa Clara, and Guanajay, are in charge of assistant surgeons with rank of first lieutenant. Such young officers are as able and efficient as could be expected, but necessarily lack the experience required to meet the responsible duties made to devolve upon them. But even junior officers are not sufficient for all our large garrisons, and we have such posts as Cabana, Morro Castle (Santiago), and Holguin in charge of contract surgeons.

The most striking feature of the list of medical officers submitted above is the great preponderance of civilian physicians under contract, or acting assistant surgeons. Even at posts where the surgeons are commissioned officers all their assistants, as a very general rule, are contract surgeons, so that we may correctly state that the great majority of our sick soldiers in Cuba (and elsewhere) are under the professional care of contract surgeons.

Enlisted men, especially in the Tropics, are entitled to the best medical attendance, and it is a fact that they do not and can not receive it under the present system, and that a great injustice is done them. Contract surgeons are not qualified by professional attainments or military experience and knowledge to perform successfully the duties required of them. This is so obvious to all that I need not dwell upon it. To become an efficient medical officer (that is, not only to be able to prescribe for the sick and perform operations, but to point out and remedy all causes tending to produce disease and inculcate the spirit of military discipline, without which army nurses and attendants are useless) requires several years of special study and careful attention to duty, and this can not be expected from civilian physicians whose service in the Army is casual and temporary. The remedy for this great evil is plain enough, and I only follow in the footsteps of the Surgeon-General in recommending and urging a large increase of the regular medical corps, so that the necessity for the employment of so many contract surgeons may cease to exist.

*General conclusion.*—To maintain the health and efficiency of United States troops on this island requires great care and particular precautions. They must be kept away from the hot sun and only exercised or drilled in the morning and evening. Their barracks must be on high, well-drained grounds, swept by breezes, away from towns, with good and abundant water supply and excellent sewerage. In this manner all infectious diseases, including yellow fever, can be avoided. It will be impossible, however, to prevent malarial fevers, diarrheal troubles, the result of improper diet or indiscretions in food and drink, and venereal diseases. These troops will doubtless exert a strong moral effect merely by their presence, and this may be enough for their raison d'etre; but should they be required to take the field and enter upon active campaign the result from a sanitary point of view would, I fear, be disappointing. After two or three weeks' exposure to the elements it is probable enough that the experience of Santiago would be repeated; that at least one-half of the command would become disabled from malarial fevers, and that the deadly effects of yellow fever and other infectious diseases would soon be superadded.

## DISINFECTION IN HAVANA.

A plant for the electrolysis of sea water, on what is known as the Woolf system, was put into practical operation in Havana in July, 1899. It was claimed that the water so treated had an average chlorine strength of 0.16 per cent, equal to 100 grains of chlorine to the gallon. This was distributed in wagons for use in disinfecting sewers, street sprinkling, and household disinfection. On the request of Maj. Gen. Leonard Wood, United States Volunteers, for an investigation into the value of this method of disinfection, Maj. Walter Reed, surgeon, United States Army, was sent to Havana to make the desired examination. Major Reed found that the chlorine strength supposed to be obtained was not reached in practice. In observations covering a period of ten days the available chlorine in the electrolysed sea water, or electrozone, varied from a maximum of 0.142 to a minimum of 0.021 per cent, or from 89.9 to 12.2 grains per gallon. A chlorine strength of less than 0.15 per cent can not be relied upon for prompt disinfection. A solution containing 0.25 per cent is, in fact, desirable. He concluded, therefore, that the electrozone as used in Havana did not possess sufficient strength for efficient and reliable disinfection. His experiments showed that a solution of sodium hypochlorite of equal chlorine percentage is just as effective in germicidal action as electrozone, and the same is true of chlorinated lime to which enough of hydrochloric acid has been added to free the whole of the chlorine. Comparing the cost of manufacture, he states that a chlorinated lime solution having a strength of 146 grains of available chlorine per gallon could have been used in Havana in quantity equal to that of the electrozone used from July 1, 1899, to March 31, 1900, at a cost of $17,802, while on the other hand the cost of the electrozone plant, the interest on this cost, and the daily expenses of management amounted to $87,033, as the cost of furnishing a like quantity of electrolysed sea water having no particular standard of strength, but certainly of a less strength than that which could have been obtained from the chlorinated lime. He therefore disapproved of the proposition to extend the Havana system of disinfection to other cities in Cuba.

## REPORT OF MAJ. WALTER REED, SURGEON, UNITED STATES ARMY, ON THE PRACTICAL USE OF ELECTROZONE AS A DISINFECTANT IN THE CITY OF HAVANA, CUBA, APRIL 20, 1900.

In compliance with paragraphs 15 and 16, Special Orders, No. 51, Adjutant-General's Office, March 2, 1900, I have the honor to submit the following report embodying my investigation concerning the practical use of electrozone in the city of Havana, together with the results of tests made to determine the germicidal value of this fluid:

The plant established in Havana by the chief engineer of that department was put into practical operation during the month of July, 1899. The method used for the electrolysis of sea water is that known as the Woolf system, and may be briefly described as consisting of eight circular, open, wooden vats arranged in pairs and each capable of holding 1,000 gallons of sea water. For each of the vats there are provided fifty-two positive and fifty-three negative electrodes, the former consisting of an alloy of platinum and iridium and the latter of zinc. As stated, these circular vats are connected in pairs and both receive, at all times when in operation, the same strength of electric current. For the four pairs of vats, therefore, four dynamos are provided.

These vats having been filled at 7 a. m. with sea water, a current having a strength normally of 3,000 ampères, with a voltage of 12–13, is passed through the water for the space of two and one-half hours. At the end of this time 200 gallons (20 per cent) are drawn from each vat and passed into two open wooden receiving tanks, which stand on the street below. Two hundred gallons of sea water are then pumped into each vat to supply the place of that removed, and at the expiration of thirty minutes 200 gallons are again passed from each vat into the receiving tank. This is repeated throughout the day's run.

It is stated that by this procedure there is produced and maintained an average strength of 100 grains of available chlorine to the gallon (0.16 per cent), which would appear to be the strength desired.

The plant is at present at work during eight hours of the day, turning out, as stated by the assistant superintendent, 24,000 gallons of electrozone, having a strength of 80–100 grains of available chlorine per gallon. The capacity of the plant, if run during the twenty-four hours, is said to be 100,000 gallons of the strength above indicated.

From the receiving tanks, each of a capacity of 5,000 gallons, the disinfectant is drawn off into closed distributing carts at all hours of the day and night and carried to various parts of the city for sewer, street, and household disinfection. I was informed by Colonel Black, chief engineer, that at present about 12,000 gallons are used daily for sewer disinfection and about 8,000 gallons for street sprinkling, those streets being selected for daily sprinkling which are located in the old part of the city, where yellow fever has been more prevalent during the past years.

For the purposes of sewer disinfection certain water-tight receptacles, having a capacity of several hundred gallons, are provided in connection with the sewers, and from these, by means of a half-inch opening, a small stream of electrozone is allowed to flow into the sewer. By this method disagreeable odors have been entirely abated and a certain degree of disinfection supposedly obtained.

As regards household disinfection, I was informed by Maj. W. C. Gorgas, chief sanitary officer, that about 4,000 gallons of electrozone were being daily used for the purpose only of cleansing and disinfecting the floors of such houses as were selected for disinfection, bichloride of mercury solution being relied upon for the disinfection of walls, etc. It will thus be seen that electrozone is being put to practical use in the city of Havana for three purposes, viz, street sprinkling, sewer disinfection, and the disinfection of floors.

After a consideration of the germicidal value of this fluid, I will again refer to its use for these several purposes.

I may here state that at the time of my first visit to the plant (3 p. m. March 11) I was impressed with the fact that although a certain standard of strength as regards available chlorine was supposed to be obtained, this was not arrived at in actual practice. At my request, the assistant superintendent kindly tested, by the arsenious acid method, the fluid contained in two vats, with the result that while one gave 0.319 per cent of available chlorine, the other contained only 0.073 per cent. A test of the fluid contained in the two distributing tanks gave, for tank No. 1, 0.071 per cent of available chlorine, while that contained in tank No. 2 gave 0.060 per cent. A second test of the fluid contained in tank No. 1, made a half hour later, gave 0.142 per cent of available chlorine.

The varying strength of electrozone, as regards its available chlorine, will be best shown by the result of the tests that were made from time to time with the fluid contained in the distributing tanks.

### TABLE I.

| Date. | Per cent of available chlorine. | | Date. | Per cent of available chlorine. | |
|---|---|---|---|---|---|
| | Tank No. 1. | Tank No. 2. | | Tank No. 1. | Tank No. 2. |
| March 11, 3 p. m | 0.071 | 0.060 | March 19, 11 a. m | 0.021 | 0.049 |
| March 11, 3.30 p. m | .142 | | March 20, 8.50 p. m | .056 | .052 |
| March 13, 3.30 p. m | .102 | .095 | March 20, 10 a. m | .071 | .070 |
| March 14, 2.30 p. m | .142 | .110 | March 20, 4.30 p. m | .070 | .070 |
| March 15, 2 p. m | .106 | .094 | | | |

Thus in observations extending over a period of ten days the amount of available chlorine varied from 0.142 to 0.021 per cent, or from 82.9 to 12.2 grains per gallon. The arsenious-acid method was used in determining the available chlorine.

As it will be later shown that the disinfectant value of electrozone depends upon the amount of its available chlorine and that the latter is rapidly lost from the solution, it can be inferred that the fluid in actual daily use must have varied markedly in its disinfectant quality.

Through the courtesy of Colonel Black I was enabled on March 20 to make a practical test as to the amount of available chlorine which could be produced by the electrolysis of sea water under this system, and on March 27 to test the capacity of the entire plant during a three hours' run.

For the first test one vat only was selected for observation, although, of course, the same strength of chlorine was probably produced in its companion vat; but sufficient time could not be given to the estimation of the strength of both vats. The conditions were favorable for the best results, as the electrodes had been thoroughly cleaned and were in good working order.

The result of this trial is given in the following table:

### TABLE II.

[Strength of current, 3,000-3,500 ampères, voltage 12-14, acting upon 1,000 gallons of sea water during the period of eight hours.]

| Time. | Percentage of available chlorine. | Grains of chlorine per gallon. | Time. | Percentage of available chlorine. | Grains of chlorine per gallon. |
|---|---|---|---|---|---|
| ½ hour | 0.046 | 26.87 | 4½ hours | 0.277 | 161.82 |
| 1 hour | .078 | 45.56 | 5 hours | .323 | 188.69 |
| 1½ hours | .106 | 61.92 | 5½ hours | .351 | 205.05 |
| 2 hours | .129 | 75.36 | 6 hours | .379 | 221.41 |
| 2½ hours | .156 | 91.13 | 6½ hours | .418 | 244.19 |
| 3 hours | .191 | 111.58 | 7 hours | .433 | 252.95 |
| 3½ hours | .213 | 124.43 | 7½ hours | .443 | 258.80 |
| 4 hours | .248 | 144.88 | 8 hours | .454 | 265.22 |

It was observed that during this trial the strength of current supplied to the three remaining pairs of vats varied from 500 to 1,800 ampères. A test of the fluid in two of these, made at 3 p. m., gave only 0.070 per cent of chlorine. This fluid was being passed into the distributing tanks for general distribution.

The result of three hours' trial of the entire system of vats is given in the following table:

### TABLE III.

| Sets. | Time. | Per cent of available chlorine. | Grains of chlorine per gallon. | Strength of current. |
|---|---|---|---|---|
| No. 1 | ½ hour | 0.024 | 14.02 | |
| | 1 hour | .056 | 32.71 | 1,900 ampères, 13 volts. |
| | 1½ hours | .081 | 47.32 | 2,300 ampères, 13.5 volts. |
| | 2 hours | .095 | 55.49 | 2,500 ampères, 13 volts. |
| No. 2 | ½ hour | .053 | 30.96 | |
| | 1 hour | .067 | 39.14 | 2,500 ampères, 12 volts. |
| | 1½ hours | .078 | 45.56 | |
| | 2 hours | .110 | 64.26 | 2,950 ampères, 12.5 volts. |
| | 2½ hours | .142 | 82.95 | |
| | 3 hours | .152 | 88.79 | 2,800 ampères, 12.3 volts. |

TABLE III—Continued.

| Sets. | Time. | Per cent of available chlorine. | Grains of chlorine per gallon. | Strength of current. |
|---|---|---|---|---|
| No. 3 | ½ hour | .031 | 18.11 | |
| | 1 hour | .067 | 39.14 | |
| | 1½ hours | .088 | 51.40 | |
| | 2 hours | .106 | 61.92 | |
| | 2½ hours | .131 | 76.53 | 2,400 ampères, 13 volts. |
| | 3 hours | .177 | 103.40 | 2,300 ampères, 12.75 volts. |
| No. 4 | ½ hour | .042 | 24.53 | |
| | 1 hour | .074 | 43.23 | |
| | 1½ hours | .099 | 57.83 | |
| | 2 hours | .124 | 72.44 | 3,400 ampères, 14.2 volts. |
| | 2½ hours | .152 | 88.79 | 2,300 ampères, 12.5 volts. |
| | 3 hours | .188 | 109.82 | 2,250 ampères, 12.5 volts. |

During this trial a heavy rain storm was prevailing which interfered with the filling of two of the vats, and hence the test with these covered a two hours' run only. A small amount of rain water entered the several vats, but not enough, it is believed, to warrant any alteration of figures. On the contrary, the result obtained in set No. 4 was higher than it would otherwise have been, owing to a leakage of about 200 gallons that occurred during the test. So that the results obtained in sets Nos. 2 and 3 may be taken to fairly represent the capacity of the entire plant during a three hours' run, under the most favorable conditions of preparation therefor. It will be seen that the available chlorine obtained amounted to 0.150 and 0.170 per cent, respectively. In other words, that 8,000 gallons of electrozone having a chlorine strength of 0.160 per cent or 93.47 grains per gallon, can be manufactured every three hours, or a possible 24,000 gallons in a nine hours' run.

This result can not be obtained, however, in the regular course of daily work, since much time must be given especially to cleaning electrodes, so that practically two vats are thrown out of use every fifth day. I believe that it would be more correct to say that the plant can produce during a nine hours' run 24,000 gallons of electrozone, having a strength of 0.150 per cent or 87.63 grains of chlorine per gallon.

I was informed by one of the gentlemen on duty in the chief engineer's office, who was present during the test, that theoretically a current of 3,000 amperes should produce 20 grains of chlorine per gallon per ampere hour. A calculation made at the end of the three hours' run showed, however, that only 12 grains of available chlorine had been obtained per ampere hour.

### THE GERMICIDAL VALUE OF ELECTROZONE.

Electrolyzed sea water or electrozone is a clear fluid, having a decided odor of chlorine. Its specific gravity appears to be the same as that of the sea water from which it is made, viz, 1027. It bleaches both blue and red litmus paper. This effect is brought about more slowly by solutions containing 0.050 per cent of available chlorine, but takes place at once by solutions having a chlorine strength of 0.100 to 0.250 per cent. Its reaction appears to be neutral. Repeated transfers of small quantities of this fluid to nutritive media showed that it was sterile. In order to ascertain how long the current must flow to bring about the destruction of the bacteria present in sea water, plates on agar were made from the sea water with which the vats were filled at intervals of five minutes for the first hour and then at ten-minute intervals during the second hour. The strength of current at the beginning of the observation was 500 amperes with 11.5 volts. After five minutes it had reached a strength of 2,500 amperes 11.5 volts and after seven minutes 3,000 amperes 13.5 volts. This strength was thereafter continued during the experiment. The material for plating was taken midway between the electrodes and the edge of the vat and at a depth of about 10 inches. The result obtained is given below:

TABLE IV.

| | Per c. c. | | Per c. c. |
|---|---|---|---|
| Number of bacteria in specimen of sea water. | 832 | After 45 minutes electrolysis | 0 |
| After 5 minutes electrolysis | 504 | After 50 minutes electrolysis | 26 |
| After 10 minutes electrolysis | 244 | After 55 minutes electrolysis | 26 |
| After 15 minutes electrolysis | 338 | After 60 minutes electrolysis | 0 |
| After 20 minutes electrolysis | 156 | After 70 minutes electrolysis | 0 |
| After 25 minutes electrolysis | 260 | After 85 minutes electrolysis | 0 |
| After 30 minutes electrolysis | 54 | After 100 minutes electrolysis | 0 |
| After 35 minutes electrolysis | 26 | After 120 minutes electrolysis | 0 |
| After 40 minutes electrolysis | 104 | | |

It would appear, therefore, that all the bacteria present are destroyed by electrolysis at the end of about one hour. As the number of bacteria per cubic centimeter of Havana Harbor water was less than had been anticipated, a second observation was made after one week. This test gave 2,158 colonies to the cubic centimeter of sea water, or an average of 1,495 colonies for the two trials.

For the purpose of determining the germicidal value of electrozone, equal parts of this fluid and of bouillon cultures of several micro-organisms, grown in the thermostat, were mixed and transfers made to sterile bouillon tubes after intervals varying from one minute to one hour. The latter tubes were kept at thermostat temperature from ten days to two weeks and the results carefully noted.

### TABLE V.

[Electrozone containing 0.050 per cent (29.21 grains) of available chlorine per gallon.]

| Cultures. | Time of exposure, in minutes. | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 2. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. | 35. | 40. | 45. | 50. | 55. | 60. |
| Staphylococcus pyog. aureus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Typhoid bacillus | + | + | + | + | + | – | – | – | – | – | – | – | – | – | – | – |
| Colon bacillus | + | + | + | + | + | + | – | – | – | – | – | – | – | – | – | – |

Subsequent observations showed that this strength of electrozone did not destroy staphylococcus aureus after eighteen hours' exposure.

### TABLE VI.

[Electrozone containing 0.100 per cent (58.42 grains) of available chlorine per gallon.]

| Cultures. | Time of exposure, in minutes. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. | 35. | 40. | 45. | 50. | 55. | 60. |
| S. pyog. aureus | + | + | + | + | + | + | + | + | – | – | – | – | – | – | – |
| Typhoid bacillus | + | + | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Colon bacillus | + | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Bacillus icteroides | + | + | – | – | – | – | – | – | – | – | – | – | – | – | – |

### TABLE VII.

[Electrozone containing 0.150 per cent (88 grains) of available chlorine per gallon.]

| Cultures. | Time of exposure, in minutes. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. | 35. | 40. | 45. | 50. | 55. | 60. |
| S. pyog. aureus | + | + | + | + | – | – | – | – | – | – | – | – | – | – | – |
| Typhoid bacillus | + | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Colon bacillus | + | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Bacillus icteroides | + | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| B. prodigiosus | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Anthrax spores | + | + | + | + | + | + | + | + | + | – | – | – | – | – | – |

### TABLE VIII.

[Electrozone containing 0.250 per cent (146 grains) of available chlorine per gallon.]

| Cultures. | Time of exposure, in minutes. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. | 35. | 40. | 45. | 50. | 55. | 60. |
| S. pyogenes aureus | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Typhoid bacillus | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Colon bacillus | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Bacillus icteroides | – | – | – | – | – | – | – | – | – | – | – | – | – | – | – |
| Anthrax spores | + | + | + | – | – | – | – | – | – | – | – | – | – | – | – |

The foregoing observations embraced in Tables V to VIII demonstrate that while solutions containing 0.050 and 0.100 per cent of available chlorine possess to a certain extent germicidal qualities these solutions can not be considered as efficient disinfectants. In order to bring about the prompt destruction of the test bacteria, solutions containing 0.150 to 0.250 per cent of available chlorine must be used. It must also be borne in mind that electrozone is a very unstable preparation, and that it rapidly loses its chlorine content, upon which its germicidal value would appear to depend. This is shown in the following table:

### TABLE IX.

| Date. | Per cent of available chlorine. | Date. | Per cent of available chlorine. |
|---|---|---|---|
| March 14, 3.30 p. m | 0.150 | March 15, 10 a. m | 0.095 |
| March 18, 4 p. m | .410 | March 19, 10 a. m | .280 |
| March 20, 6 p. m | .454 | March 21, 10 a. m | .374 |
| March 22, 10 a. m | .259 | March 22, 1.30 p. m | .216 |

In the first two observations the sample of electrozone was contained in dark-colored bottles, tightly closed with a cork stopper; in the third it was contained in a Squibb's chloroform bottle, with ground-glass stopper, and kept in an ice box till reexamined, while in the fourth observation the fluid was purposely left in an open vessel.

To what the instability of this preparation is due, even when kept in tightly stoppered vessels, I am unable to state. It may be attributed either to further oxidation of organic matter present in the solution, or more probably to recomposition of its chemical constituents. At any rate, this unstableness of electrozone is fully appreciated by the officer in charge of the plant, and hence an effort is made to use the fluid as soon after its manufacture as possible. Since, however, it is manufactured in open vats and stored in open tanks it can not fail to continually lose its chlorine strength, and hence to reach its destination with lessened germicidal value.

By reverting now to Table I, it will be seen that the strongest preparation of electrozone found in the distributing tanks during a period of 10 days contained 0.142 per cent of available chlorine, a percentage which was to some extent lessened before its application as a disinfectant. I have already shown that a less chlorine content than 0.150 per cent can not be relied upon for prompt disinfection. A solution containing 0.250 per cent of available chlorine is to be desired. Even a solution of this strength would, after 3 to 6 hours, fall approximately to one containing 0.200 per cent of chlorine. It follows that the electrozone heretofore used in Havana has not possessed sufficient chlorine strength to have rendered it an efficient and reliable disinfectant for practical work.

In order to further test the disinfectant value of electrozone, the following experiments were made:

*Experiment I.*—Equal parts of electrozone (0.130 per cent chlorine) and a thin watery sewage containing 5,000,000 bacteria to each cubic centimeter were mixed. An agar plate made with one loop of the mixture gave after 1 minute 25 colonies, after 5 minutes 10 colonies, and after 1 hour 4 colonies. A bouillon transfer made after 24 hours gave a growth of nonspore-bearing bacilli.

*Experiment II.*—Equal parts of electrozone (0.250 per cent chlorine) and thin sewage were mixed, with the following result: Plate after one-half minute, 8 colonies; plate after 2 minutes, 2 colonies; plate after 30 minutes, 16 colonies. Bouillon transfer after 24 hours gave a growth of nonspore-bearing bacilli.

The foregoing experiments show that while these examples of electrozone, when mixed in equal parts, did not completely sterilize the sewage, the number of bacteria were promptly and markedly reduced.

*Experiment III.*—Electrozone (0.150 per cent chlorine) was mixed with a sample stool in the proportion of 1 part to 1 part, 2 parts to 1, 3 parts to 1, and 4 parts to 1 of the stool. The latter was made by adding 10 grams of solid fæces to 30 c. c. of urine and the two thoroughly mixed with a glass rod. Some escape of fine gas bubbles to the surface of the liquid was observed. Plates made after 2, 6, and 24 hours gave numerous colonies of the colon bacillus in all of the mixtures.

*Experiment IV.*—To a sample stool consisting of 10 grams of fæces and 40 c. c. of urine, well stirred, were added 150 c. c. of electrozone containing 0.280 per cent of available chlorine. There was prompt evolution of numerous fine gas bubbles, which collected as a layer at the surface, with temporary bleaching of the amber color of the mixture.

A test for the available chlorine in the latter after 3 hours gave 0.035 per cent. Plates made after 3, 12, and 24 hours gave numerous colonies.

*Experiment V.*—Semisolid fæces, 10 grams; urine, 20 c. c., and electrozone (0.370 per cent chlorine), 300 c. c., or in the proportion of 10 pints of this stronger electrozone to 1 pint of stool, were mixed. Bouillon transfers made after 5 minutes, 6 hours, and 24 hours gave a good growth. Agar plates made after 16 hours and 24 hours gave numerous colonies of nonspore-bearing bacilli.

The foregoing experiments would indicate that where there is much organic matter present, and especially in the form of particles of moderate size, the chlorine content of electrozone (0.370 per cent chlorine) is entirely exhausted prior to the complete disinfection of the mixture.

Where, however, this stronger electrozone is brought in contact with thoroughly decomposed fæcal material, the disinfection may be complete after a comparatively short interval, as shown in the following experiments:

*Experiment VI.*—To a thoroughly decomposed sewage (20,000,000 of bacteria to the cubic centimeter) consisting of fæcal matter, 1 part, and urine, 30 parts, were added varying proportions of electrozone (0.250 per cent chlorine) from 1 to 1 to 6 to 1 of sewage. The solutions made with 1 part of sewage to 5 and 6 parts of electrozone were rapidly bleached with much frothing. Transfers made to sterile bouillon after 2 hours' interval gave no growth in any of the mixtures.

*Experiment VII.*—To 1 part of fluid sterile fæces, with which a bouillon culture of the typhoid bacillus had afterwards been mixed, was added 4 parts of electrozone (0.250 per cent chlorine). Plates made after 10, 20, 30, and 60 minutes showed no colonies. In other words, in order that these stronger solutions of electrozone may bring about the complete disinfection of sewage the organic matter must be in a state of extremely fine suspension, which we do not ordinarily find in the practical disinfection of sewage or stools. In all the foregoing experiments, although disinfection was not accomplished in the majority, the obnoxious odors of all were promptly suppressed by the addition of electrozone.

Returning, now, to the practical use of electrozone in the city of Havana, I may say that the small quantity allowed to enter the sewers could only act as a deodorizer, and in no sense of the word as a disinfectant. Could the several sewers of the city be filled with this solution and kept full for the period of 24 hours, complete disinfection would hardly be accomplished. It is idle, then, to speak of this agent as a disinfectant for the sewage of the city.

As a surface disinfectant for walls and floors the stronger solution (0.250 to 0.450 per cent chlorine) will undoubtedly be found effective, but not the weaker solutions heretofore used. For covering the surface of material recently removed from sewers, before it can be carted away, it will accomplish good by surface disinfection and the removal of foul odors.

As regards the matter of street disinfection by sprinkling, it must be remembered that under Colonel Black's supervision the streets of Havana, as far as I was able to judge, are kept in a remarkably clean condition and quite free of all surface refuse. Under these circumstances, far more efficient disinfection is effected by direct sunlight than could be expected from the use of any disinfectant solution. Hence I can but think that the sprinkling of streets with electrozone is entirely superfluous, except for the purpose of allaying dust.

It only remains to compare the disinfectant qualities of electrozone with solutions of other hypochlorites, such as those of sodium and calcium containing the same equivalent of available chlorine.

Since my return from Havana I have been engaged in this comparison, making use of the same method for determining the available chlorine present. The results obtained are recorded below:

TABLE X.

[Solution of sodium hypochlorite, 0.100 per cent of available chlorine.]

| Cultures. | Time of exposure in minutes. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. | 35. | 40. | 45. | 50. | 55. | 60. |
| S. pyogenes aureus | + | + | + | + | + | + | + | − | − | − | − | − | − | − | − |
| Typhoid bacillus | + | − | − | − | − | − | − | − | − | − | − | − | − | − | − |
| Colon bacillus | + | − | − | − | − | − | − | − | − | − | − | − | − | − | − |
| Bacillus icteroides | + | − | − | − | − | − | − | − | − | − | − | − | − | − | − |

### TABLE XI.

[Solution of sodium hypochlorite, 0.150 per cent of available chlorine.]

| Cultures. | Time of exposure in minutes. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. | 35. | 40. | 45. | 50. | 55. | 60. |
| S. pyogenes aureus | + | + | − | − | − | − | − | − | − | − | − | − | − | − | − |
| Typhoid bacillus | − | − | − | − | − | − | − | − | − | − | − | − | − | − | − |
| Colon bacillus | − | − | − | − | − | − | − | − | − | − | − | − | − | − | − |
| Bacillus icteroides | − | − | − | − | − | − | − | − | − | − | − | − | − | − | − |

### TABLE XII.

[Solution of sodium hypochlorite, 0.250 per cent of available chlorine.]

| Cultures. | Time of exposure in minutes. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. |
| S. pyogenes aureus | − | − | − | − | − | − | − | − | − |
| Typhoid bacillus | − | − | − | − | − | − | − | − | − |
| Colon bacillus | − | − | − | − | − | − | − | − | − |
| Bacillus icteroides | − | − | − | − | − | − | − | − | − |
| Anthrax spores | + | + | − | − | − | − | − | − | − |

### TABLE XIII.

[Solution of chloride of lime, 0.100 per cent of available chlorine.]

| Cultures. | Time of exposure in minutes. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. | 35. | 40. | 45. | 50. | 55. | 60. |
| S. pyogenes aureus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Typhoid bacillus | + | + | + | + | − | − | − | − | − | − | − | − | − | − | − |
| Colon bacillus | + | + | + | + | − | − | − | − | − | − | − | − | − | − | − |
| Bacillus icteroides | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

### TABLE XIV.

[Solution of chloride of lime, 0.150 per cent of available chlorine.]

| Cultures. | Time of exposure in minutes. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. | 35. | 40. | 45. | 50. | 55. | 60. |
| S. pyogenes aureus | + | + | + | + | + | + | − | − | − | − | − | − | − | − | − |
| Typhoid bacillus | + | + | − | − | − | − | − | − | − | − | − | − | − | − | − |
| Colon bacillus | + | + | − | − | − | − | − | − | − | − | − | − | − | − | − |
| Bacillus icteroides | + | + | + | − | − | − | − | − | − | − | − | − | − | − | − |

### TABLE XV.

[Solution of chloride of lime, 0.250 per cent of available chlorine.]

| Cultures. | Time of exposure in minutes. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. |
| S. pyogenes aureus | + | + | + | + | − | − | − | − | − |
| Typhoid bacillus | + | − | − | − | − | − | − | − | − |
| Colon bacillus | + | − | − | − | − | − | − | − | − |
| Bacillus icteroides | + | + | + | − | − | − | − | − | − |
| Anthrax spores | + | + | + | + | + | + | + | + | + |

An examination of the foregoing observations (Tables X–XV) will serve to show that while the solutions of sodium hypochlorite (Labarraque's solution), of equal chlorine percentage, were just as effective in germicidal action as electrozone, the solutions of chlorinated lime were much less efficient in their disinfectant qualities; a solution containing 0.250 per cent of available chlorine requiring not less than 10 minutes to destroy staphylococcus pyogenes aureus and 35 minutes to kill anthrax spores.

In seeking an explanation of this marked difference in action between solutions of electrolyzed sea water and those of bleaching powder, I think that we must take into consideration the difference in the comparative bleaching action of these two solutions. Electrozone bleaches instantly; solutions of chlorinated lime, on the contrary, bleach slowly. In other words, the chlorine content of electrozone would seem to exist as a very unstable hypochlorite, or as free chlorine, which would account not only for its prompt bleaching action but also for the instability of this fluid. On the other hand, calcium hypochlorite is a more stable compound and gives off its chlorine slowly.

If, however, to the solutions of chlorinated lime there is added a small quantity of acid, such as dilute hydrochloric acid, so as to set free its chlorine and bring the latter into solution, while still preserving the alkalinity of the fluid, then we find that its bleaching effect is just as prompt as solutions of electrozone. Not only this, but its germicidal action is just as effective as electrozone having the same chlorine content.

The following tables will serve to confirm this statement:

### TABLE XVI.

[Solution of chlorinated lime containing 0.100 per cent of available chlorine as free chlorine.]

| Cultures. | Time of exposure, in minutes. | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. | 35. | 40. | 45. | 50. | 55. | 60. |
| S. pyogenes aureus | + | + | + | + | + | + | − | − | − | − | − | − | − | − | − |
| Typhoid bacillus | + | + | − | − | − | − | − | − | − | − | − | − | − | − | − |
| Colon bacillus | + | + | − | − | − | − | − | − | − | − | − | − | − | − | − |
| Bacillus icteroides | + | − | − | − | − | − | − | − | − | − | − | − | − | − | − |

### TABLE XVII.

[Solution of chlorinated lime containing 0.150 per cent of available chlorine as free chlorine.]

| Cultures. | Time of exposure, in minutes. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. | 20. | 25. | 30. |
| S. pyogenes aureus | + | + | + | − | − | − | − | − | − |
| Typhoid bacillus | + | − | − | − | − | − | − | − | − |
| Colon bacillus | + | − | − | − | − | − | − | − | − |
| Bacillus icteroides | + | + | − | − | − | − | − | − | − |

### TABLE XVIII.

[Solution of chlorinated lime containing 0.250 per cent of available chlorine as free chlorine.]

| Cultures. | Time of exposure, in minutes. | | | | | |
|---|---|---|---|---|---|---|
| | 1. | 3. | 5. | 7. | 10. | 15. |
| S. pyogenes aureus | − | − | − | − | − | − |
| Bacillus icteroides | − | − | − | − | − | − |
| Anthrax spores | + | + | + | − | − | − |

It will be seen, therefore, that chloride of lime to which hydrochloric acid has been added in the proportion of 40 parts by weight of the acid to 100 parts of lime, has been rendered, by the liberation of its chlorine, as effective in disinfectant qualities as electrozone. As care was taken to preserve the alkalinity of the solution, its germicidal action could not be attributed in any respect to free hydrochloric acid, but only to the chlorine remaining in solution as free chlorine.

Since chloride of lime and hydrochloric acid are agents that can be readily procured in large quantities and easily stored for use, it does not seem inappropriate to compare the cost of this disinfectant with the cost of electrozone. The latter preparation, I was informed by Colonel Black, was manufactured at a cost of 1.2 mills per gallon; and that to manufacture an electrozone of 0.250 per cent chlorine strength would cost about 2.6 to 2.8 mills per gallon.

It must be remembered that in making this estimate no account has been taken of the original cost of the plant, amounting to $75,000, nor of the interest on this sum ($4,500 per annum), nor of the depreciation of the plant, generally computed at 10 per cent per annum. Only the actual daily operating expenses ($37 per day) have been considered.

It is believed that the following calculations will closely approximate the relative cost of chlorinated lime and electrozone as disinfectants: To 1 pound of chloride of lime (7,000 grains), 3 cents; 1 pound of hydrochloric acid, 3½ cents. Seven thousand grains of chloride of lime, containing 35 per cent, or 2,450 grains of available chlorine, would make 16.78 gallons of a disinfectant, having a strength of 0.250 per cent, or 146 grains of chlorine per gallon. Deducting 1.78 gallons as loss of chlorine in making the preparation, we have: To 15 gallons of disinfectant, 1 pound of lime, 3 cents; 15 gallons of disinfectant, one-half pound of hydrochloric acid, 1.75 cents; total, 4.75 cents; or at a cost of 3.17 mills per gallon, or for 24,000 gallons, a cost of $76.08 per diem.

Since July 1, 1899, to March 31, 1900—234 working days—the total expenditure would have been $17,802 for sufficient chloride of lime and hydrochloric acid to have supplied a disinfectant having 146 grains of available chlorine per gallon.

On the other hand, we have the following:

| | |
|---|---|
| Plant | $75,000 |
| Interest at 6 per cent for 9 months | 3,375 |
| Daily expenses, $37 for 234 working days | 8,658 |
| | 87,033 |

as the cost of supplying daily for 234 working days 24,000 gallons of electrozone, having no particular standard of strength as regards available chlorine, but certainly of a less strength (see Table I) than 0.150 per cent.

It seems fair to conclude, therefore, that had the sanitary authorities of Havana resorted to chloride of lime as the disinfectant instead of electrozone, the work of disinfection would have been more thoroughly carried out and the insular funds would have been richer by $69,231.

In carrying out the experimental part of this report I desire to state that I have received valuable aid from Acting Asst. Surgs. A. Agramonte, Jesse Lazear, and James Carroll, United States Army.

## THE DEPARTMENT OF PORTO RICO.

### HEALTH OF THE TROOPS.

In this department, with a mean strength of 5,693 regulars and volunteers during the year 1898, the admissions to sick report were equivalent to 2,574.21 per thousand of strength, and the death rate from all causes to 48.48 per thousand. Injuries contributed only 126.82 to the admission rate and 2.46 to the death rate, while gunshot injuries gave only 9.48 and 1.58, respectively. Malarial infections and diarrheal diseases contributed equally to the large rate of admission, the one 772.35 and the other 767.61 per thousand of strength, with mortality rates of 3.86 and 1.41 per thousand. Typhoid fever was the important factor as regards both prevalence and mortality, for 1,678 admissions with 197 deaths gave the respective rates of 294.74 and 34.60 per thousand of strength. Seven cases of smallpox with 2 deaths were reported during the year.

During the year 1899, with a mean strength of 3,727 regulars and volunteers, the admissions to sick report were equivalent to 2,522.40 per thousand strength, but the character of the cases were so much lighter than those of the preceding year that the death rate fell from 48.48 to 11.27 per thousand of strength. Injuries contributed 266.43 to the admission rate and 2.15 to the death rate, while gunshot injuries gave only 5.37 and 0.54, respectively. Diarrheal diseases added 542.80 to the admission rate, but gave only 2.68 to the death rate. Typhoid fever increased the death rate by 2.68, but gave only 15.03 to the admission rate, as compared with the excessive rates 34.60 and 294.74 of the previous year. Malarial infections added 458.84 to the admission rate, but no case proved fatal. There were 286.29 admissions for venereal disease per thousand men present during the year, with 25 men discharged for disability, equaling a loss of 5.63 men per thousand of strength. Seven cases of smallpox, none fatal, were reported during the year.

## SEASONAL PREVALENCE OF DISEASE.

In Porto Rico in 1899 the mean monthly rate of admission to sick report for disease was 188 per thousand of strength. The minimum rate, 145.62, was recorded in February, the maximum, 270.69, in April. The rates continued above the mean in May, June, and July. During the other months they were about or below the mean. The excess of cases in April was due to alcoholism and venereal diseases.

The mean monthly death rate was 0.76 per thousand of strength. During April, May, June, July, August, and October the rates were above this figure, the maximum, 1.41, in August. No death occurred in the command in March. The small number of men constituting the army of occupation deprives these rates of value as indices of climatic influences. They are given in the following table:

| Diseases. | January. | | | | February. | | | | March. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 10 | 1.60 | 2 | 0.32 | 12 | 1.77 | 2 | 0.30 | 4 | 0.79 | ..... | ..... |
| Malarial infections | 314 | 50.22 | ..... | ..... | 249 | 36.81 | ..... | ..... | 153 | 30.28 | ..... | ..... |
| Undetermined fevers | 5 | 80 | ..... | ..... | 4 | .59 | ..... | ..... | 7 | 1.39 | ..... | ..... |
| Rheumatic affections | 57 | 9.12 | ..... | ..... | 36 | 5.32 | ..... | ..... | 39 | 7.72 | ..... | ..... |
| Consumption | 3 | .48 | ..... | ..... | ..... | ..... | 1 | .15 | 3 | .59 | ..... | ..... |
| All venereal diseases | 145 | 23.19 | ..... | ..... | 120 | 17.74 | ..... | ..... | 143 | 28.30 | ..... | ..... |
| Alcoholism and direct results | 29 | 4.64 | ..... | ..... | 19 | 2.81 | ..... | ..... | 16 | 3.17 | ..... | ..... |
| Diarrheal diseases | 304 | 48.62 | 1 | .16 | 223 | 32.97 | 2 | .30 | 162 | 32.06 | 1 | 0.20 |
| Pneumonia | ..... | ..... | ..... | ..... | 1 | .15 | ..... | ..... | 1 | .20 | ..... | ..... |
| Total respiratory | 47 | 7.52 | ..... | ..... | 55 | 8.13 | ..... | ..... | 31 | 6.13 | ..... | ..... |
| All diseases | 1,190 | 190.31 | 4 | .64 | 985 | 145.62 | 5 | .74 | 879 | 173.96 | 3 | .59 |

| Diseases. | April. | | | | May. | | | | June. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 1 | 0.35 | ..... | ..... | 9 | 2.55 | ..... | ..... | 2 | 0.64 | 1 | 0.32 |
| Malarial infections | 120 | 42.09 | ..... | ..... | 82 | 23.24 | ..... | ..... | 134 | 42.64 | ..... | ..... |
| Undetermined fevers | 10 | 3.51 | ..... | ..... | 7 | 1.98 | ..... | ..... | 7 | 2.23 | ..... | ..... |
| Rheumatic affections | 30 | 10.52 | ..... | ..... | 20 | 5.67 | ..... | ..... | 17 | 5.41 | ..... | ..... |
| Consumption | ..... | ..... | 1 | 0.35 | 2 | .57 | ..... | ..... | 2 | .64 | 1 | .32 |
| All venereal diseases | 108 | 37.87 | ..... | ..... | 94 | 26.64 | ..... | ..... | 76 | 24.18 | ..... | ..... |
| Alcoholism and direct results | 21 | 7.36 | ..... | ..... | 19 | 5.39 | ..... | ..... | 21 | 6.68 | ..... | ..... |
| Diarrheal diseases | 124 | 43.48 | 1 | .35 | 212 | 60.09 | 1 | 0.28 | 294 | 93.54 | 1 | .32 |
| Pneumonia | 1 | .35 | ..... | ..... | 3 | .85 | 1 | .28 | ..... | ..... | ..... | ..... |
| Total respiratory | 27 | 9.46 | ..... | ..... | 36 | 10.20 | 1 | .28 | 24 | 7.63 | ..... | ..... |
| All diseases | 772 | 270.69 | 4 | 1.40 | 707 | 200.40 | 3 | .85 | 826 | 262.81 | 4 | 1.27 |

| Diseases. | July. | | | | August. | | | | September. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 9 | 3.13 | 3 | 1.04 | 1 | 0.35 | 1 | 0.35 | 1 | 0.35 | | |
| Malarial infections | 144 | 50.02 | | | 109 | 37.79 | | | 54 | 18.76 | | |
| Undetermined fevers | 1 | .35 | | | 1 | .35 | | | | | | |
| Rheumatic affections | 15 | 5.21 | | | 25 | 8.67 | | | 25 | 8.68 | | |
| Consumption | | | | | 2 | .69 | | | 2 | .69 | | |
| All venereal diseases | 80 | 27.79 | | | 65 | 22.54 | | | 49 | 17.02 | | |
| Alcoholism and direct results | 11 | 3.82 | | | 10 | 3.47 | | | 7 | 2.43 | | |
| Diarrheal diseases | 152 | 52.80 | 1 | .35 | 107 | 37.10 | | | 128 | 44.46 | | |
| Pneumonia | | | | | 1 | .35 | | | 1 | .35 | | |
| Total respiratory | 17 | 5.90 | | | 20 | 6.93 | | | 12 | 4.17 | | |
| All diseases | 648 | 225.08 | 4 | 1.39 | 509 | 176.49 | 2 | .69 | 434 | 150.75 | | |

| Diseases. | October. | | | | November. | | | | December. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | | Deaths. | | Cases. | | Deaths. | | Cases. | | Deaths. | |
| | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. | No. | Ratio. |
| Typhoid fever | 3 | 1.05 | | | 3 | 1.07 | | | 1 | 0.35 | 1 | 0.35 |
| Malarial infections | 95 | 33.40 | | | 147 | 52.33 | | | 108 | 38.09 | | |
| Undetermined fevers | 1 | .35 | | | 2 | .71 | | | | | | |
| Rheumatic affections | 10 | 3.51 | | | 23 | 8.18 | | | 13 | 4.58 | | |
| Consumption | 1 | .35 | | | 2 | .71 | | | 2 | .71 | | |
| All venereal diseases | 65 | 22.85 | | | 51 | 18.16 | | | 71 | 25.04 | | |
| Alcoholism and direct results | 7 | 2.46 | | | 11 | 3.92 | | | 13 | 4.58 | | |
| Diarrheal diseases | 121 | 42.55 | 2 | 0.70 | 95 | 33.82 | | | 101 | 35.62 | | |
| Pneumonia | | | | | 1 | .36 | | | 1 | .35 | | |
| Total respiratory | 10 | 3.51 | | | 17 | 6.05 | | | 17 | 5.99 | | |
| All diseases | 494 | 173.70 | 4 | 1.41 | 497 | 176.93 | | | 467 | 164.67 | 1 | .35 |

## THE HURRICANE OF AUGUST 8, 1899.

According to the report of the chief surgeon, the salient feature of the year in Porto Rico was the hurricane of August 8, 1899. Barracks and hospitals were destroyed or much damaged at most of the posts. Many men were injured, but fortunately only one man belonging to the Army lost his life as a result of the cyclone. At Cayey the military hospital was destroyed, but the patients had been removed twenty minutes before the fall of the building. At Mayaguez the hospital was unroofed and the walls so strained that their fall seemed imminent. At Humacoa the barracks were destroyed and one man was buried in the ruins, while one end of the hospital was blown down and several men were injured. At Lares the hospital building was unroofed.

The Santa Rosa Hospital for indigent sick in San Juan was so badly damaged as to give no protection to its inmates. Capt. George M. Wells, assistant surgeon, United States Army, commanding the general hospital in the city, immediately transferred the exposed patients to his hospital, where they were cared for until returned to their own establishment, September 5. Much suffering was relieved by the prompt action of this officer. Again, at Ponce, where the destruction of property and loss of life occasioned by the storm were excessive, a tent hospital of 125 beds was established by Lieut. B. K. Ashford, assistant surgeon, United States Army, for the shelter and treatment of the sick who would otherwise have been uncared for. Much relief was given by this extemporized hospital.

Following these prompt efforts for the relief of local sufferers from the hurricane came an organized system by which nearly 200,000 people were kept from starvation for several months, and the medical officers of the Army were the chief agents by which this work was accomplished. From September 16, 1899, to January 22, 1900, the average number of destitute people fed each day was reported as 182,195. The total cost of the relief work was something over a million dollars expended for food and transportation, with practically no expense for personnel.

### MUNICIPAL SANITATION.

The duties of our Army medical officers in this department would have been light during the past year had they been restricted to the care of the sick and wounded of the Army and the supervision of sanitary conditions affecting their commands; but there was placed upon these officers the responsibility for the welfare of the whole civil population. All the troops were in garrison under conditions of peace, with improvements steadily going on as to quarters, drainage, water supplies, and other matters affecting their sanitary condition, so that in June, 1900, the sick list at San Juan comprised only 4.5 per cent of the command; at Ponce, 2.6 per cent; at Mayaguez, 5.2, and at Cayey, 3.7, these being four of the largest posts in the department. But the sanitary supervision of the towns and districts in which the military posts were established was imposed upon these medical officers, who accepted their new and unusual duties with cheerfulness and devoted their energies to their successful fulfillment. A superior board of health for the island was constituted by General Orders, No. 91, headquarters Department of Porto Rico, June 29, 1899, to which all local boards of health were required to report. Maj. John Van R. Hoff, surgeon, United States Army, chief surgeon of the department, was appointed president of the board, and under his able and energetic management a modern sanitary code was given to the island. The duties of this board were announced in General Orders, No. 102, headquarters of the department, July 18, 1899, as follows:

> It shall be the duty of the superior board of health:
>
> 1. To have general supervision of all the interests of the public health of the island, and to especially study its vital statistics.
>
> II. To make sanitary investigations and inquiries respecting the causes of disease, and especially of epidemic diseases, including those of domestic animals, the sources of mortality, and the effects of localities, employments, condition, habits, food, beverages, and medicine on the health of the people.
>
> III. To disseminate information upon these and similar subjects among the people.
>
> IV. To institute sanitary inspections of all public institutions or places throughout the island.
>
> V. To consider and report to the governor upon the plans and specifications for all new water supplies, drainage, sewerage plants, and public institutions of all kinds, or for alterations in such public works or institutions. Copies of such plans and specifications will be filed in the office of the board.
>
> VI. To suggest amendments to the sanitary laws of the island and to have power to enforce such regulations as will tend to limit the progress of epidemic diseases.
>
> VII. To have power and authority to order nuisances or the causes of any special diseases or mortality to be abated and removed, and to enforce such interior quarantine regulations as said board shall direct in cities, municipalities, districts, or places where there are no local boards of health, or in case the sanitary laws or regulations should be inoperative in places where boards of health or health officers exist. Any person who shall fail to obey or shall violate such order shall, upon conviction, be sentenced to pay a fine of not more than $100 or be imprisoned for not more than sixty days, at the discretion of the court.
>
> VIII. To have general supervision of the insular system of registration of births, marriages, and deaths, and of prevalent diseases, and to insure the faithful recording of the same; also to prepare the necessary methods, forms, and blanks for obtaining and preserving such statistics.

IX. To prepare regulations governing the admittance of persons to the practice of medicine and surgery, pharmacy, dentistry, midwifery, embalming, and undertaking, and to enforce such regulations as are adopted by the government of the island.

X. To inquire into and report upon violations of laws governing the purity and wholesomeness of foods, drinks, drugs, and medicines. To submit, through the governor of the island, regulations to control offensive and dangerous occupations, and to report upon and make recommendations regarding any special sources of danger to life or person.

XI. To require all health officers and health boards throughout the island to forward to the superior board copies of all their reports and publications, and such other sanitary information as it may request. To require reports and information concerning such matters or particulars, in respect to which it may, in its opinion, need information for the proper discharge of its duties, from all public dispensaries, hospitals, asylums, infirmaries, prisons, penitentiaries, schools, and from the managers, principals, and officers thereof, and from all other public institutions, their officers and managers, and from the proprietors, managers, lessees, and occupants of all places of public resort throughout the island.

XII. To from time to time engage suitable persons to render sanitary service, or to make or supervise practical and scientific investigations and examinations requiring expert skill, and to prepare plans and reports relating thereto. This regulation must not be considered as authorizing any expenditure beyond the sum specifically alloted to the board for such purposes in the annual budget. When the cost of such investigations exceeds the allotment, special authority for the expenditure must be obtained from the governor of the island.

XIII. To make a written report to the governor on or before June 30 of each year, covering the general sanitary conditions of Porto Rico, the work of the officers and agents of the board, and a detailed statement by the treasurer of all moneys received and disbursed during the year. To submit special reports from time to time, as the occasion may demand.

XIV. To especially supervise subjects directly relating to public health, as follows:

1. Public water supplies.
2. Markets, bakeries, groceries, and milk depots.
3. The purity and wholesomeness of all foods, drinks, liquors, drugs, and medicines.
4. Public institutions, schools, asylums, jails, hospitals, dispensaries, barracks, court rooms, theaters, etc.
5. Tenement houses.
6. Vital statistics, marriages, births, deaths.
7. Licensing and registration of physicians and surgeons, dentists, pharmacists, midwives, undertakers, etc.
8. Plumbing and registration of plumbers.
9. Sewering.
10. Street cleaning.
11. Privies, water-closets, cesspools, etc.
12. Nuisances.
13. Slaughterhouses, stables, yards.
14. Contagious and infectious diseases.
15. Trades, factories, and industries offensive or injurious to the public health.
16. Undertaking and cemeteries.
17. Disinfection.
18. Licenses and permits.
19. Vaccination and the production of vaccine virus.
20. Diseases of domestic animals communicable to man.
21. Interior quarantine.
22. Poisons, explosives, and special sources of danger to life and person.
23. Sanitary supervision of travel and traffic.

XV. To institute prosecutions for violations of the provisions of this order in the nearest local court or in the United States provisional court, as the governor may direct.

By command of Brigadier-General Davis:

W. P. HALL, *Adjutant-General.*

At the time of our occupation of the island the prevalence of smallpox was so general that quarantine had been declared by the neighboring islands against the seaports. The disease existed in every direction, and was a constant menace to the people and a detriment to their material interests. A general vaccination of the whole population was systematically carried into effect, the vaccine being provided from a farm established at Coamo Springs. This extensive work was finished June 30, 1899; 742,062 vaccinations and 116,955 revaccinations were recorded. The disease was suppressed. No death from smallpox has been reported in the island for the past eight months. Again, while much of the pernicious anæmia which is so prevalent and fatal among the native population is certainly due to an impoverished diet, it has been shown by Lieut. B. K. Ashford, assistant surgeon, United States Army, that a great deal of the prostrating diarrhea and progressive emaciation, which has usually a fatal ending, is due to the irritating presence in the intestines of a number of minute worms (ankylostoma duodenalis), which can be easily got rid of by appropriate medication. (See page 784.) This disease has been extremely fatal, but its ravages will now be controlled under the supervision of local boards of health. These boards, acting under the instructions of the supreme board at San Juan, have done much to improve sanitary conditions and lessen sickness and mortality among this poverty-stricken people.

The superior board of health has prescribed an examination and license for all physicians, dentists, pharmacists, practicantes, midwives, and nurses now practicing in the island. It has appointed sanitary inspectors in every district, from whom regular reports of sanitary conditions are received. It has established a laboratory for the examination of food and drugs. It is collecting and collating the vital statistics of the country, and it has published several circulars or bulletins on the proper treatment of the prevalent diseases.

The work of the Medical Department of the Army in the Department of Porto Rico during the past year has added an exceedingly gratifying page to its history. The annual report of the chief surgeon, Maj. John Van R. Hoff, surgeon, United States Army, dated July 24, 1900, is herewith submitted:

The salient feature of the year in Porto Rico was the hurricane of San Ciriaco, which occurred August 8, 1899, and the history of which is known to the world. Fortunately for the troops, but one of the 2,750, more or less, reported to have died as the result of that cyclone belonged to the Army. This is indeed remarkable when the widespread destruction, involving barracks, hospitals, and quarters, is considered. At Humacao the cavalry barracks were crushed to the earth, and beneath them Private Harry J. Barker, Troop C, Fifth Cavalry, lost his life. At Cayey the barracks and hospital were literally blown off the earth, while at Aibonito nothing but shapeless ruins marked the spot where shortly before stood apparently substantial stone structures. At Mayaguez the hospital was so wrecked and shattered that its immediate abandonment was found necessary, and at almost all other stations more or less damage was suffered.

The following report from Dr. H. A. Eberle, post surgeon at Cayey, written on the very day of the hurricane, gives a startling glimpse of the then occurring conditions:

"I have the honor to report the complete destruction of the post hospital at Cayey, Porto Rico, at half past 6 this morning. The sheet iron roofing of the west end of the hospital was carried away, and, fearing that the whole structure would go, I removed patients, three in number, to my house. It was a fortunate move, for in twenty minutes thereafter the entire roof was carried away, the walls staggered, and in a few minutes fell on the floor of the hospital, burying the beds, bedding, tables, medicines, books, reports, linen, blankets—in fact, everything that the hospital contained. Several accidents happened to the men—severe cuts and broken bones. All the wounded men are in my rooms and are being cared for. Our new supplies arrived last night and were stored in the basement of the building now used as a kitchen. The walls have fallen over these supplies, and we are not able to predict their condition.

"Until a complete examination is made of what can be saved from the débris I will not ask for any supplies.

"The town has suffered incalculably, as there is not a house in the city which is not totally or seriously damaged.

"Of course the barracks are ruined and the stables down, but Captain Foster is improvising quarters for the best comfort of the troops.

"The storm is still raging at this hour, 5 p. m."

On the 10th the foregoing report was supplemented, as follows:

"I have the honor to state that since yesterday morning we have been providing quarters for the sick and wounded, purchasing supplies and rations, and gathering from the wrecked hospital some needful medicines.

"Sufficient cots and mattresses have been secured for present need. The bed linen and pillows were soaked and much damaged. Washerwomen were employed to-day to clean the linen. The captain provided a room in the stable suitable for six cots.

"Our books are all water-soaked and unfit for any kind of use whatever. We need a complete outfit of blank books, and I have no information slips on which to make requisition.

"The medical and surgical chests lie under tons of rock and mortar, and are supposed to be crushed, water-soaked, and unfit for service.

"The health of the troop is good, and seven only figure on our improvised medical register.

"A requisition for medical supplies will follow as soon as possible, and only the most needful articles will be asked for, as our room is too small to store many.

"There have been 34 bodies brought into the cemetery for burial, 28 of whom died from starvation, 6 killed from falling timbers.

"There is much destitution here and food is greatly more needed than clothing. Mrs. Eberle and daughters have employed their time in clothing and feeding a few of the most destitute.

"The shacks of the poor were totally ruined and they are absolutely without shelter. Unorganized contributions, if speedily sent, would do a world of good and perhaps save many from starvation."

On August 9 the surgeon at Mayaguez reported as follows:

"I have the honor to inform you that on August 8, 1899, the post hospital at Mayaguez was damaged to such an extent by a tornado that it was necessary to remove the patients to the barracks during the height of the storm. In each of the wards the walls were cracked and injured to such a degree that they could be seen swaying back and forth with the wind. One partition, that between the squad room and the Hospital Corps dining room, fell and several members of the corps narrowly escaped serious injury. Parts of the other walls have since fallen and considerable damage has been done to the medical property. The veranda in the inner court was completely torn away on the east and south sides, and damaged on the two other sides. The first damage done was the blowing away of a portion of the tin roofing from the veranda. This occurred about 10 a. m. and from that time the wind increased in severity until 11.30 a. m., when the partition in the squad room fell. About this time the other walls began to crack and the patients were hurried over to a room on the first floor of the barracks, as it seemed that the whole building would be destroyed. The hospital building is damaged in such a manner that after an inspection by the commanding officer this morning it was considered unsafe for occupancy until very extensive repairs have been made. The patients are for the time being comfortably situated in the barracks, and a building has been rented in the city to be used as a hospital. As soon as it is properly policed and arranged the patients will be moved there."

On the same date the surgeon at Humacao reported:

"I have the honor to inform you that during the tornado three men of Troop C, Fifth Cavalry, were seriously wounded. Harry J. Barker, internal injuries, abdominal, serious; Joseph Foutaine, dislocation of hip (reduced under ether) and two scalp wounds, severe; Hugh J. Clark, fracture (comminuted), both bones left forearm, scalp and face wounds, contusion right hip and thigh, severe. All three received injuries by being buried under fallen brick wall. No others belonging to this command have been badly injured; several sprained ankles, wounds, contusions, etc., but none severe. Officers are all well. The hospital roof is in bad condition, but has been patched until it is now the best in town except the jail. One end of building was blown out, but has been since boarded up. We are, compared to others, very well off. I have not lost medicines or dressings to any extent, and supply has been sufficient to meet all demands so far."

On August 12 the surgeon at Lares wrote:

"I have the honor to report that the recent storm which visited Porto Rico caused considerable damage to this post. There were four men sick in this hospital at the time, none serious. The storm completely unroofed the building, admitting the rain in torrents; but one room which had been fitted up for the operating room was fairly dry and the sick occupied that. Acting Steward McCleery and the three privates of the Hospital Corps at this post all conducted themselves in a creditable manner, looking out for the comfort of the patients and protecting as well as they could the property of the Medical Department. The blankets and bedding were kept dry, as were many perishable articles, but some loss has been sustained, just how much I am unprepared to state at present.

"All telegraphic and mail communication is cut off for the time being, mail being received only from Aguadilla.

"The hospital, Ponce, suffered slight damage to the walls, and that at San Juan had the windmill destroyed."

From the foregoing it will be seen that considering the extent of the damage, the loss of life was remarkably small.

Fortunate as we were, the hurricane had a distinctly deleterious effect upon the command, which manifested itself throughout all departments, and postponed the attainment of the highest degree of efficiency, both sanitary and otherwise, which the beginning of the fiscal year promised. For the most part we have been Samaritans, not soldiers, ministering to the wants of a starving population, and struggling to keep alive those who, in accordance with the Draconian laws of nature, should have made room for a fitter people. But who can say that this was not a higher duty than the perfecting of details which make up a military machine.

The details lack polish, but 100,000 people more are alive in Porto Rico to-day than would have been had not the Army turned itself into a purveyor of beans, rice, codfish, and old clothes.

However, the Medical Department has not "marked time," for there has been a distinct lessening in the number of sick and dead, which is the true measure of its value. In July, 1899, the total sick equaled 8.4 per cent of strength, while in June, 1900, it was but 4.3 per cent. The daily average for the first six months of the year was 7.6 per cent, and for the second six months 4.7 per cent, the latter as against 6.4 per cent for the last six months of the fiscal year 1899. The total number of cases under treatment for the year was 7,758 and the average daily noneffectiveness from sickness was 210.

The total number of deaths was 33, being at the rate of 10.6 per thousand per annum. The causes of deaths were, killed by natives, 4; dysentery, 3; typhoid fever, 8; cerebro-spinal meningitis, 2; remittent fever, 1; septicæmia, 1; pneumonia, 2; cardiac embolism, 1; rheumatic fever, 1; accidents, 3; suicide, 4; apoplexy, 1; gastro-enteritis, 1; heart failure, 1. Total 33.

The total number of discharges on surgeon's certificate, exclusive of those under paragraph 844, Army Regulations, was 72, and 28 recruits (Porto Rico) were discharged under this paragraph. The causes of discharge were: Tuberculosis, 11; venereal, 19; varicocele, 4; insanity, 8; epilepsy, 3; gonorrheal rheumatism, 1; hernia, 10; catarrh of stomach, 1; corns and sore feet, 1; recurrent appendicitis, 1; flat foot, 1; heart disease, 2; chronic arthritis, 2; chronic eczema, 2; injuries, 4; blindness 2.

*Prevailing diseases.*—June 30, 1900, there remained under treatment 151 cases, of which 7 were typhoid, 20 digestive, 48 venereal, and 21 malarial; from which it will be seen that the same diseases continue to preponderate, and in the same order. During the year there were under treatment 2,011 cases of digestive diseases, 1,480 cases of venereal diseases, and 1,235 cases of malarial diseases. Sixty cases of typhoid fever were treated during the year, of which number 8 died. Besides the foregoing the only infectious diseases reported were: Measles, 22 cases; dengue, 53; erysipelas, 3; and cerebro-spinal meningitis, 1, of which only the latter died. While digestive diseases still claim the largest share of total sickness, there has been a marked decrease in the rate per thousand, which is 649 against 916 last year. The reason for this is quite apparent, and the improvement would have been much more marked had the hurricane not occurred. The men had settled down to peace conditions and were living the usual comfortable garrison life—ample shelter, sufficient clothing, proper food. While the cyclone interfered to a certain extent with all of these, it destroyed the fruit, which may be considered an offset.

Venereal diseases still maintain their unenviable prominence, the annual rate being 478 per thousand, against 467 last year. It is interesting to observe that these diseases are quite as prevalent among the Porto Rico volunteers as among the regular troops, which supports the position taken in my last annual report, that the people here are syphilized.

Perhaps no more startling proof can be given of this than that deduced from the last census and published in Bulletin No. 2, as follows: "The persons over 45 years of age in Porto Rico were only 11.8 per cent of the entire population. This is in marked contrast to the United States, where persons over 45 were 17.2 per cent of the total population, and also to other countries. Thus in India this class was nearly 15 per cent and in Cuba 14.2 per cent of the total population."

To be sure, in spite of this, the population has steadily increased up to last year, when the death rate exceeded the reported birth rate. Perhaps sufficient was said on this subject in my last annual report, but this danger to home communities from returning soldiers is a constant threat which not only concerns us, but will reach even unto the third and fourth generation. The efforts to control prostitution have been noneffective because of the inefficiency of the means and the indifference of public opinion. If syphilization is so general here, why should the Porto Ricans interest themselves to prevent the United States soldier from becoming syphilized?

As was to be expected, the records show considerable improvement in malarial diseases—440 per thousand, against 509 last year. This will continue to improve, as the hurricane undoubtedly indirectly increased the number of cases. It may be well to note the fact that the Porto Rico volunteers show proportionately a much larger number of cases than the regular troops. In fact, their sick rate is higher all along the line, except at Cayey, where, in comparison with the former garrison, the present command has an excellent health record.

Up to the present time there has been no epidemic in Porto Rico. Immediately following the hurricane, dysentery occurred extensively among the people, especially in the uplands, and a large number died, but this did not extend to the troops.

The conditions now obtaining here, which accentuate the hunger, filth, misery, and want which are the common heritage of 800,000 Porto Ricans, are ripe for an epidemic, needing only the match to start the conflagration. To prepare for all contingencies, sites for camps of refuge for all garrisons have been designated and the post commanders directed to make the necessary arrangements for immediate evacuation. The following circular was issued from this office May 21, 1900:

"In view of the approach of the sickly season and the possibility of an epidemic occurring which might require the immediate evacuation of your post, you will at once assemble all the material necessary for the establishment of a field hospital adequate to the requirements of your command, and keep it always ready for immediate mobilization. You will predetermine what men of your detachment will be attached to this hospital, what duties they will perform, what clothing they will take, how they and the field hospital will be transported—in fact, everything necessary—and will make full memorandum, so that should an order to move reach you there will be no confusion and nothing forgotten.

"In order to assure yourself that everything is provided and to enable your men to become acquainted with the material of the hospital, the pitching of tents, loading and unloading of the material, etc., you will from time to time cause your field hospital to be pitched and all the material pertaining to it placed therein exactly as it would be in case of actual use. Should you lack anything pertaining to such a hospital, as laid down in Manual, Medical Department, or elsewhere, you will at once make requisition on the proper department for it, and if it can not be obtained you will report the fact to this office."

The question of a permanent infectious-disease hospital at San Juan is still sub-judice, and fortunately up to the present time there has been no occasion for one. With the reduction of the garrison the building designed and constructed by the Spaniards as a yellow-fever hospital, but used by us as barracks, could be put to the use for which intended should the necessity demand. In the meantime, to meet any ordinary emergency the following recommendation was submitted, June 6, 1900:

"In this climate an infectious-disease hospital is quite likely to be required at any time, and can not be improvised in a moment. Its requirements are efficiency, isolation, and convenience. The location of the present city hospital is ideal for this purpose, but not available for the moment. The most practicable suggestion as a temporary expedient is to use Santa Elena Battery as an infectious-disease hospital for the command, turning out the Municipal Board of Health Hospital and assigning to it a location at Puerta de Tierra for an infectious-disease hospital for the civil population. This would demand no construction, as the present building would be sufficient for storage purposes, and floored and raftered tents would furnish shelter for the sick. It is so recommended."

As bearing upon the sanitary conditions, it may be recalled that the only changes in the constitution of the command during the year was occasioned by the organization of the Second Battalion, Porto Rico Regiment, United States Volunteer Infantry, numbering 450 officers and men, and the departure of the first squadron of the Fifth United States Cavalry, March 24, 1900. The strength of the command on June 30, ultimo, was 3,096, against 3,142 on June 30, 1899. The monthly sanitary reports, several of which have been most interesting and exhaustive, and the inspection by the chief surgeon lead to the conclusion that there has been considerable improvement in the immediate sanitary surroundings of the troops, but I am persuaded that there is yet room for improvement. A study of the percentages of sickness at the four largest posts is interesting, but not entirely conclusive. As frequently remarked, the sick report of a command, under average circumstances, depends in large measure upon the zeal and experience of the medical officer.

At the beginning of the month there were remaining under treatment at San Juan, 4.5 per cent; at Ponce, 2.6 per cent; at Mayaguez, 5.2 per cent, and at Cayey, 3.7 per cent (Porto Rico Battalion in camp).

The headquarters and the Third Squadron, Fifth Cavalry, and the First Battalion, Eleventh Infantry, are at this writing under orders to proceed to the United States, together with 2 medical officers, 3 acting assistant surgeons, 5 acting hospital stewards, and 25 privates, hospital corps; 1 signal officer, 6 noncommissioned officers, and 9 privates of the Signal Corps.

At the beginning of July, 1899, there were remaining sick from the previous year, at San Juan, 10 per cent; at Ponce, 6.8 per cent; at Mayaguez, 8 per cent, and at Cayey, 11.3 per cent (M Troop, Fifth Cavalry, in barracks).

Attention is invited to the interesting report of First Lieut. B. K. Ashford, Medical Department, United States Army, some time surgeon at Ponce, for the month of September, 1899, in which reasons are given for the abolition of the post. Certainly the present very satisfactory condition of the health of the command would be an argument against such as a sanitary necessity. But, as a practical fact, at this moment the community of Ponce is living over a powder mill. There is no epidemic, except of poverty and starvation, but the death rate, which last week was at the ratio of 123 per thousand per annum, would indicate a condition of affairs ripe for anything. While the annual rate for 1899, 42 per thousand, is not evidence of a health resort, the rate for the entire island was 41.

The War Department has a very valuable plant at Ponce, which could doubtless be disposed of for more than enough to construct a modern and perfectly appointed suburban military post.

A considerable amount of constructional work has been done on barracks and hospitals during the year, much of it entailed by the hurricane, and it may be stated that all of the permanent posts are in fairly good condition.

Attention is invited to the series of interesting sanitary reports from the surgeon of the post of San Juan, covering the sanitary conditions and requirements of that station. So far as observable, the least comfortable, relatively, of the military people are the officers and noncommissioned staff. They should at least be made as comfortable here as at home.

The drainage and sewerage remains about the same as last year, when it was stated that such was "practically nonexistent." The barracks at San Juan alone have sewer connections.

The water supply is usually adequate in quantity, but the quality is always suspicious. Every barrack should be supplied with some efficient and convenient means of sterilizing water, for all the water in Porto Rico must be regarded as bad. In this connection attention is invited to the reports of First Lieutenants Ashford and Russel, Medical Department, United States Army, on intestinal parasites in Porto Rico, the logical deduction from which is that a very large percentage of the natives of the island entertain the most objectionable of these entozoa. Considering their habits, this is not surprising, nor is it surprising that drinking water here must be sterilized to be safe.

Ice is very essential to our people in the Tropics. An excellent plant has finally been established in San Juan which produces 3 tons of ice and 500 gallons of distilled water daily. The plant at Ponce is not efficient, and is very expensive in connection with the supply of water to the hospital there. As ice is now readily obtainable from commercial sources in Ponce, I have recommended that the ice machine there be moved to Cayey, provided the latter is to become a permanent station.

The monthly reports indicate that the food is satisfactory in all respects. I have not heard of any post gardens being started, but the advantages of such are apparent. The practical truth of the matter is, we do not yet feel at home here and are thinking much more of getting away than putting our establishment in order for a long and comfortable sojourn.

Clothing is reported in ample supply, but objection is made to the "war" khaki, which is bedecked with various colors and when washed becomes all colors. It has been suggested that the several thousand suits of this in stock might be distributed to the natives here, who now wear only their skins. But this is hardly a satisfactory disposition of a United States Army uniform.

The habits of the men as to intoxication are reported as improving. Court-martial has eliminated the worst drunkards who managed to elude the vigilance of the recruiting officer; but rum is so universal and cheap and the demands that the Tropics make upon northern vitality are so pressing that a stimulant of some kind is necessary and the most convenient one will usually be taken. Two hundred and twenty-eight cases of diseases of the nervous system occurred last year.

I wish I might be able to say that these records indicate a decline in venery, but unfortunately such is not the case, for of all diseases venereal alone shows an absolute increase, a ratio of 506 per thousand. Some of the worst of these cases were discharged on surgeon's certificate of disability, with the recommendation from this office that the discharge be made "without honor." Several reasons led us to this recommendation. (1) It was believed necessary to take stringent measures to control the spread of a disease which was not only threatening the efficiency of the service, but was threatening to involve our people at home to-day and far into the future. (2) It was believed that some were so misguided that they actually sought the disease as a means by which they might obtain discharge from service which had become irksome to them. (3) It was thought that the Government had some equity in the matter and should not be called upon to lose any more of its investment in the particular individual than was absolutely necessary. These views were not accepted, as shown by the following correspondence:

WAR DEPARTMENT,
*Washington, D. C., May 26, 1900.*

The COMMANDING GENERAL, DEPARTMENT OF PORTO RICO,
*San Juan, P. R.*

SIR: By direction of the Assistant Secretary of War, I have the honor to communicate to you herewith the opinion of the Surgeon-General of the Army, dated May 12, 1900, which has been concurred in by the Assistant Secretary of War:

"In my opinion discharge for venereal diseases should not be a discharge 'without honor' and there should be no objection to the reenlistment of a man discharged for such disease, if he has entirely recovered. If it is considered in the interest of the service to discharge a man who has contracted venereal disease rather than to retain him in service until he has recovered under proper treatment, he should be given the usual discharge upon certificate of disability, which certificate should set forth the fact that the disease was not contracted in the line of duty, but there is not authority for indorsing the nature of the disease upon the soldier's discharge.

"If enlisted men are discharged 'without honor' for contracting venereal diseases, officers should be dismissed the service if they meet with a like misfortune."

Very respectfully,

THOMAS WARD,
*Acting Assistant Adjutant-General.*

The present condition of the permanent hospitals is as follows:

The hospital at San Juan, which ceased to be a general hospital December 31, 1899, is in excellent condition. Expended in repairs during the year, alterations and plumbing, $2,884.10. The capacity of this building is far beyond present and prospective demands. To concentrate the work and material of the medical depot, it is proposed to turn over the present hospital corps squad room (6,000 square feet) to be used by the supply depot. The considerable reduction of the hospital corps detachment on duty at this hospital will permit this use of the space, and thus allow both the hospital and depot to be brought, if necessary, under the control of one officer.

The hospital at Ponce is in admirable condition and is, as it always has been, a credit to the department. Expended in repairs during the year $730.16.

The hospital at Mayaguez, which, as above stated, was wrecked by the hurricane, is now undergoing repairs, at a cost of $5,000. During the intervening period a very comfortable private building has been used, at a rental of $75 monthly. The delay in the repair of the hospital was due to various causes, chief among which was the determination of the title to the property.

The hospital at Aibonito has been repaired on the old lines, at a cost of $550. It is comfortable and adequate to any demand likely to be made upon it.

No permanent construction has yet been made at Cayey, but an excellent temporary hospital has been established in half of the barracks building (for dispensary, wards, etc.). A frame building was constructed on the foundation of the old hospital, to be used for messroom, kitchen, and storeroom, at a cost of $1,783.04.

Very satisfactory temporary hospitals in private buildings are maintained at Humacao, Aguadilla, and Adjuntas, the last named the least so.

Four temporary hospitals, Arecibo, Lares, Manati, and San German, have been abandoned.

Furniture, appliances, and supplies of all kinds are ample.

The personnel of the medical department at the date of this report consists of—

| | Medical officers, U.S.A. | Medical officers, U.S.V. | Acting assistant surgeons. | Hospital stewards, U.S.A. | Hospital stewards, Porto Rico regiment, volunteer infantry. | Acting hospital stewards, Hospital Corps, U.S.A. | Privates, Hospital Corps, U.S.A. | Contract nurses, female. |
|---|---|---|---|---|---|---|---|---|
| July 25, 1900: | | | | | | | | |
| Present | 7 | 2 | 10 | 4 | 2 | 15 | 81 | .......... |
| Under orders | 2 | .......... | 3 | 1 | .......... | 5 | 25 | .......... |
| Remaining | 5 | 2 | 7 | 3 | 2 | 10 | 56 | .......... |
| Strength July 25, 1899 | 12 | .......... | 19 | 8 | .......... | 20 | 124 | 8 |

No contract (female) nurses have been on duty in the department this year (1900).

The reduction of the medical strength to little more than 3 per cent of the command is considered to be the lowest justifiable limit, though considerably in excess of the regulation allowance. I hope the time has come when the authorities will realize that the sanitary soldier is intended to meet just the circumstances that any other soldier should. He is not only for present conditions but future contingencies, and there should be about as many of him as those contingencies are likely to require. The present reduction was made to meet the emergency of foreign service.

The instruction during the year continued on the lines laid down in the circulars of December 28, 1898, which requires four hours weekly to be devoted to this purpose. The class standing is reported monthly in the return of the Hospital Corps, and the good result of the instruction is shown by the fact, as stated in a letter from the Surgeon-General's Office, that the proportion of acting hospital stewards was higher in this department than in any other.

The examinations are quite up to the standard of antebellum days.

Attention is respectfully invited to the report of the officer in charge of the medical supply depot, San Juan, hereto attached. A very large amount of property has been inspected and condemned. This is due to several causes: (1) A great deal of property was destroyed by the hurricane, and (2) a considerable amount of wornout property had accumulated and awaited the action of the inspector.

In spite of the vicissitudes of war and various other happenings in Porto Rico, there still remains on hand a large amount of field supplies, much of which has been in use. The supply officer has had such of this as was worth it put in order, but while it might be exceedingly useful here, I question whether it would be worth sending elsewhere. Many special requisitions have been received from the smaller posts, so many indeed that a circular was issued calling attention to paragraph 68, Manual Medical Department, 1899.

The supplies have been ample and adequate in all respects.

The demands made upon the medical department in relation to the civil work were quite commensurate with that of the rest of the military body in Porto Rico. Everywhere the requirements of a starving race thrust themselves upon us, and I am happy to say that everywhere my officers and men willingly accepted the added burden. On the day of the hurricane Captain Wells, at the height of the storm, went to the rescue of those caught in the wreck of the Santa Rosa Hospital, San Juan, and personally supervised their transfer to the military hospital. Lieutenant Ashford, at Ponce, opened his hospital to the homeless sick there, and as soon as possible after the storm erected a tent hospital which for months furnished everything necessary to the best care of hundreds of sick who otherwise must have gone without care. Lieutenant Russel, at Humacao, afterwards alcalde of that municipality, rendered signal service, as did Lieutenant Truby at Mayaguez, while Drs. Eberle, McConathy, Williams, and Cutliffe were unsparing of themselves in their efforts to relieve not only their own sick but those of the suffering communities about them.

The organization and general supervision of the relief work in Porto Rico fell to the writer and has been made the subject of an exhaustive report, but I can not fail to take advantage of this opportunity to invite the particular attention of the department commander to the very important part taken by all the medical personnel in the effort to keep 100,000 human beings alive.

The reestablishment of the general sanitary organization of the island, the formulating of regulations, the licensing of the medical personnel, the organizing of a chemical laboratory, vaccine station, etc., indeed all the functions of a State board of health, which had been in abeyance since before the invasion, added to the already heavy burdens of the medical department, but were made cheerfully and zealously.

The organization of the insular charity institutions and their supervision also fell to our share, until it seemed that in no day were there hours enough for the work.

In connection with these various undertakings I would invite special attention to the valuable services of the following-named gentlemen, who have not heretofore been mentioned in this report: Maj. P. R. Egan, surgeon, United States Army, who during most of the time the relief work was being carried on was secretary and disbursing officer, and who purchased much and distributed all of the medical supplies used in this work; Maj. George G. Groff, surgeon, United States Volunteers, who was secretary of the superior board of health, was largely instrumental in its organization, and Dr. Harold W. Cowper, acting assistant surgeon, who at different times was the secretary of both the superior board of health and the board of charities, Porto Rico, in both of which his services were marked by zeal and intelligence.

With the completion of this report my official connection of nearly two years with this department as its chief surgeon and of more than a year with the present department commander ceases. I may therefore be pardoned in expressing my appreciation of the unfailing support which he has extended to me and the kindly courtesy which has marked all our relations.

### EXTRACT FROM THE REPORT OF MAJOR P. R. EAGAN, SURGEON, UNITED STATES ARMY, MEDICAL SUPPLY OFFICER, DEPARTMENT OF PORTO RICO.

Experience in a tropical clime has shown that the following articles should receive special attention in order to prevent their deterioration:

1. Chloral, potassa, and deliquescent salts should be placed in glass-stoppered bottles.
2. Articles of iron, such as garden trowels, gridirons, etc., should be galvanized.
3. Articles of tin, such as colanders, milk pails and buckets, pans (milk, dish, and waffle), Arnold sterilizers, etc., should be made of agate ware. Iron and tin ware is soon rusted through, and the life of such articles in this climate is very short.
4. All surgical instruments should be well protected by the application of a film of vaseline by the manufacturer. Case and thick paper alone are not sufficient protection here.
5. Saws, hand and butcher, and the contents of tool chests should be well protected by vaseline and wrapped in paper.
6. All medical books should be wrapped in thick manila paper, with the title outside. Two weeks here is sufficient time to mold the covers unless so protected.
7. Tourniquets, rubber, and Martin's bandages should be protected by talcum when placed in their packages.
8. No wax should be used to seal bottles of liquids; capping is cleaner and better.
9. The green soap in the surgical chests should be inclosed in a strong screw-capped vessel. At present it escapes and fouls everything in its compartment.

## DISPOSAL OF EXCRETA.

In my last annual report is given the description of a trough system for the collection of the excreta of camps with an odorless excavating apparatus for their removal. This system was recommended by a board of medical officers to whom I referred the subject. Their report was forwarded to the Adjutant-General of the Army and the details of the subject were published in General Orders, No. 170, September 26, 1899. In their report the board stated that "methods of incineration of fæces have been and are being investigated, but our practical examination has not been sufficiently extensive to warrant us in recommending any of them." In a second report the board stated that it had been able to examine the practical operation of three crematories which had been erected for trial at Washington Barracks, D. C.

First. The combined camp crematory for excreta and garbage designed and submitted by Frederick P. Smith, C. E. This consists of a series of hoppers arranged in a circle about a central furnace. The materials to be destroyed are received on flat plates having such an incline that the liquid parts flow toward the central fire and are subjected to a constant drying. The solid parts are from time to time pushed toward the edge of the fire, and when dried can at any time be raked into the grate and burned. A large evaporating pan is placed above the fire for the reception of garbage, which, when dried sufficiently, is tilted into the fire and burned. Draft and ventilation are secured by a pipe having a height of about 40 feet. This crematory was reported to have accomplished all that its inventor claimed for it. Its weight, however, renders it unsuitable for troops on field service. A 14-hopper crematory for two companies would weigh 7,000 pounds.

Second. A crematory submitted by the Albany Sanitation Company, of Albany, N. Y. This consisted of a furnace and 7 closets. Each closet section is a cylindrical tube of one-fourth inch cast iron 20 inches in diameter, and weighing 150 pounds. Rising from each section is a cast-iron hopper, provided with suitable seat and cover. The separate closet sections are provided with flanges, by means of which the several sections are securely bolted together, thus forming a continuous iron tube, connected at one end with the furnace. Excreta are received into this hollow iron tube. A galvanized-iron pipe 14 inches in diameter is provided for the purpose of bringing a current of warm air from the furnace, and thence conducting it to the distal end of the excreta tube, from which point it is drawn over the surface of the excreta. This serves both for the purpose of drying the excreta and for the ventilation of the closet. A urinal is provided, from which the urine is conducted, by means of a 3-inch iron pipe, to a pit beneath the furnace, where it is subject to constant evaporation. The furnace is furnished with a smokestack 16 inches in diameter, rising to a height of about 35 feet.

This crematory accomplished in ventilation and freedom from odor all that was claimed for it by the Sanitation Company, but it failed to effect the thorough desiccation of the excreta preparatory to incineration. Moreover, the weight and unwieldiness of its sections render it unsuitable for portability.

Third. A crematory submitted by the International Household Garbage and Excrement Crematory Company, of Buffalo, N. Y. This consists of a steel jacket lined with asbestus within and provided with a sheet-iron covering without. The top and bottom of this jacket consist of cast iron. The excreta are received into a cast-iron pot, having a capacity of 7 gallons, and which revolves on a horizontal axle. A suitable grate, with ash pit, is provided beneath the pot. An opening of proper dimensions, with seat and cover, is provided in the cast-iron top of the jacket. Ventilation is brought about by means of a 6-inch stovepipe flue rising to a height of 12 feet. When desired to destroy the contents of the pot, the wooden seat and cover are removed, the opening closed with a galvanized-iron cover provided for that purpose, and a fire started on the grate below. The board found that the ventilation was not such as to remove all offensive odors when the cover was lifted and that during incineration pungent and disagreeable odors were evolved.

The closing paragraph of the report of the board is as follows:

> In the opinion of the board, none of those mentioned above meet all the conditions of troops in the field as well or as economically as the apparatus recommended by this board in its report of December 28, 1898. We believe that the apparatus therein described is much easier of construction, far more readily transportable, and capable of effecting the same results in an equally satisfactory manner as to the disposal of excreta. For large hospitals or permanent camps the Smith crematory, if intelligently managed, will suffice for the destruction of both excreta and garbage, and for such purposes we believe that it may be recommended.

Several of the Smith crematories were sent to Cuba for practical trial. They were used at Guanajay and Pinar del Rio. At neither of these places did they give satisfaction. Major Havard, chief surgeon of the division, August 23, 1900, urged the speedy substitution of some other system for the disposal of excreta and garbage at these two posts. The chief defect of the Smith crematory was an offensive odor, due to imperfect combustion. He believed that if this were remedied the system would be valuable.

## FOOD.

The subsistence allowance of 40 cents per day has proved ample at all posts to give the sick and wounded the special diet which they require.

Since the occupation of Cuba, Porto Rico, and the Philippines by our troops much has been said and written on the desirability of altering the ration of the United States Army to suit it for the needs of the system in tropical climates. At first the claim was freely made that the ration should contain less meat, less fat, and more rice than under existing laws. This agitation subsided when volunteer medical officers came to understand that the diet of the soldier may be varied by the use of many articles that are not mentioned as parts of the daily ration; that with the commuted savings of the ration articles may be purchased from the Subsistence Department or from outside sources with which to vary the diet, and that, as stated by Major Havard in his report for the division of Cuba (see page 684), the diet of the soldier is what the company commander and his first sergeant and cook may choose to make it, the materials being amply provided by the official ration. Under present laws and regulations the soldier may have any variation of his diet within certain money value limits which his officers consider necessary for his well-being. His ration is fixed by law, but his diet depends on the intelligent supervision of company officers and the ability of company cooks.

Besides this, a further experience in the Philippines has shown that though it is undoubtedly true that while leading quiet lives men eat less in a tropical climate than in a temperate or cold climate, and particularly of meat or fatty substances, our soldiers during the active operations of last year have shown no marked tendency to lessen the quantity of fresh meat eaten. Exhausting labors and fatigues with corresponding wear and tear of the muscular system require a liberal meat issue, which the soldier uses with satisfaction and advantage. According to the chief surgeon Department of Northern Luzon, the fresh beef and mutton sent to the Philippines came as a rule from Australia, and was issued in excellent condition to the troops in the interior, hundred of miles from Manila.

During the active service of the troops in the Philippines a scarcity of fresh beef and potatoes was at one time reported from some of the commands, particularly from outlying posts in Nueva Vizcaya, which were reached with difficulty. With these exceptions and that of a recently received report from Maj. Jefferson R. Kean, surgeon, United States Volunteers, chief surgeon Department of Havana and Pinar del Rio, medical officers have expressed entire satisfaction with the present ration and the earnest efforts of the Subsistence Department to supply their commands.

Major Kean refers in his report to what he regards as certain shortcomings in the army ration, particularly as regards its use in a tropical country. He premises that a tropical dietary, as compared with one suited to a colder climate, should have less fat and more carbohydrates, less stimulating proteids in the form of meat, a greater variety of diet both of meats and of carbohydrates in the form of fresh vegetables and fruits, and, lastly, a fairly liberal supply of ice. His argument for the substitution of carbohydrates for fats is that the digestion is weakened in hot climates and the liver is inclined to torpidity, while ingested fats are prone to split up into butyric, caproic, and other irritating acids, which the diminished secretion of the liver is unable to neutralize. As intestinal digestion can not proceed in the presence of acidity, the condition known as biliousness is established, with putrefaction of the intestinal contents and the production of various harmful alkaloidal substances. A catarrhal inflammation of the bowel results, with diarrhea, which is at first of advantage in eliminating the harmful substances, but which under the continued irritation of unsuitable diet is liable to continue and become aggravated. As to a lessened use of meat, he cites the dietary customs of the inhabitants of hot climates, who get their proteids less from meat than from the leguminosæ. The appetite is lessened by long and continued heat and becomes capricious. It craves variety, especially in vegetables and fruits, and these he claims can not be had on the basis of our present ration. The need of ice to furnish a cool drinking water and to preserve the perishable constituents of the ration is regarded as obvious.

The ration fails in his opinion to provide for these requirements, for although there are several alternative issues authorized in Army Regulations, 1253, the choice of them does not seem to be with the soldier or his captain, and the company savings as now authorized on the fresh-beef and other issues do not suffice to purchase enough of fresh vegetables. He tabulates the savings made by 18 organizations, numbering 1,900 men, at Columbia Barracks, Cuba, from July 1 to December 31, 1899, as showing a per diem of only 1.8 cents per man.

To remedy these defects he suggests certain changes in the ration: That mutton and fish be issued each twice in ten days; that the issue of fresh meat in garrison be ordinarily 12 ounces, the commutation of the remaining 8 ounces of the 20-ounce ration to be paid in cash into the company, troop, hospital, or other mess fund; that commanders of departments, corps, or independent divisions or brigades be empowered, on the recommendation of the chief surgeon, to increase the issue of fresh meat not to exceed 20 ounces when necessary; that the vegetable component of the ration to be issued consist of rice, 2.4 ounces; frijoles, 2.4 ounces, or macaroni, 2 ounces, and fresh vegetables, in proper variety (purchased in the vicinity of the post when practicable), 16 ounces, and that ice, 32 ounces, be added to the ration. In our present ration potatoes are a daily issue, furnishing the bulk of the fresh vegetable allowance. These potatoes have to be transported from the United States. During the spring and summer they become spoiled during the three or more weeks required to get them from the dealer in New York into the hands of the company cooks in Cuba. Meanwhile sweet potatoes, cabbage, onions, kershaw, pumpkin, squash, beets, turnips, yams, plantains, and bananas can be obtained in abundance in Cuba at almost any season of the year. Major Kean's suggestions provide also that in the field canned tomatoes or other canned or dried vegetables may be issued instead of fresh vegetables or to make up a deficiency in the supply of the latter. If desired by company commanders, a commutation price of 5 cents shall be paid instead of the allowance of fresh vegetables when these can not be supplied by the Subsistence Department in the field. The commutation price for fresh vegetables is intentionally made about double the ordinary market value of the vegetable component because of the difficulty of making purchases cheaply and to the best advantage on field service.

Lastly, it is suggested that when the chief commissary of the command finds it impracticable to supply ice, a commutation of 1 cent per pound should be paid in lieu thereof.

There is no doubt that the more liberal the commuted value of the savings of the ration the better will be the dietary of the soldier. It must be noted, however, that Major Havard, chief surgeon of the division, who surveys the whole field in Cuba, is of the opinion that the ration, under the supervision of intelligent officers, is ample to furnish everything requisite.

*Ptomaine poisoning.*—Four instances of ptomaine poisoning were reported during the past fiscal year. The transport *City of Rio de Janeiro* left Honolulu, H. I., October 17, 1899, for Manila, P. I., carrying about 700 officers and men of the Thirty-fifth United States Volunteer Infantry, C. W. Fry, acting assistant surgeon, in charge, and Maj. H. O. Perley, surgeon, United States Army, a passenger on board. Five days later 25 cases of gastro-enteritis occurred, the disease being chiefly confined to one company. This outbreak was at the time attributed to the use of canned goods purchased by the men from the commissary stores on board the transport. Under this impression further sale of these was prohibited. Next day, however—that is, on the evening of the 23d and morning of the 24th—289 enlisted men and 2 officers were attacked with abdominal pains, vomiting, diarrhea, headache, muscular prostration, and great thirst. All these symptoms were not manifested equally in every case. In 42 the headache was very severe, and in 18 the diarrhea could not be restrained. Muscular weakness was present in all, and in 35 there was excessive perspiration, with coldness of the skin, cramps of the legs and arms, aching of the joints, great restlessness, and muscular twitchings. In a few of the cases prostration was very great and the pulse feeble. One man died at the end of eight hours. On investigation it was found that all who were sick had eaten of the fresh meat issued to the men on the evening of October 23. The use of this meat was discontinued. No further sickness occurred.

On March 25, 1900, out of a company of 94 men of the Eleventh United States Infantry, forming part of the garrison of San Juan, P. R., 57 were admitted to hospital and 10 became slightly sick, but did not apply for treatment. The symptoms were persistent vomiting, severe cramps in the stomach, purging, great prostration, dilatation of the pupils, headache, clammy perspiration, chilliness, and great thirst. The stomach in each case was washed out by means of the stomach tube. In some cases the stomach was empty, and nothing but water and mucus came away; in others the washings were tinged with bile, and in others again a moderate amount of food that had been eaten for breakfast was washed out, but in no case was the stomach overdistended or even full. The vomiting was controlled in several instances by the washing out of the stomach, but in many it persisted for several hours afterwards. The prostration was so great that some of the patients fainted before reaching the ward. A large number vomited blood in small clots, in most instances mixed with nothing but mucus, showing that the hemorrhage had not taken place until after the contents of the stomach had been expelled. Purging began in most before the vomiting had ceased, and continued for twelve to fifteen hours. At first the stools were natural, soon watery, afterwards becoming mucus and blood tinged. Cramps in the voluntary muscles were mild in some, but other patients writhed in agony, their sufferings being relieved only after thorough kneading and massage by the hospital attendants. Forty were discharged from hospital on the following morning; the others from day to day until the fifth morning, when all were returned to duty.

A careful study of the food eaten that morning led the surgeon, Capt. George M. Wells, assistant surgeon, United States Army, to refer this general attack to the condensed milk used with the mush furnished for breakfast.

Acting Asst. Surg. L. B. Sandall reported two instances in Company L, Ninth United States Infantry, at Concepcion, P. I., one on March 13, the other on May 13, 1900. Forty-four men were affected in the one case; 28 in the other. All recovered after suffering from vomiting, watery stools, profuse cold perspirations, and cramps in the thighs, legs, and feet. Corn-beef hash was considered to be the cause of the trouble, but the cans when opened appeared to be in perfect condition.

## CLOTHING.

The clothing issued by the Quartermaster's Department has given satisfaction to the troops, whether serving in Alaska, in the severe climate of Montana and Dakota, or in the islands in the Tropics. At first, as stated in my last annual report, the unsuitability for use in the Tropics of the clothing worn by the troops on their arrival in the islands was indicated by many medical officers, and many suggestions were submitted. During the past year, however, only a few critical references to clothing are to be found in the sanitary reports. These relate chiefly to stiffness or a want of pliability in the texture and of uniformity in the color of some of the khaki issues. Khaki cloth of the strongest texture is required to withstand the wear and tear of the rough field service experienced by our troops in the Philippines, and this strength of texture is incompatible with a high degree of pliability, particularly while the uniform is new. It is understood that the Quartermaster's Department has made great improvement in the texture and coloring of the field uniform during the past year.

## PREVALENCE OF SPECIAL DISEASES.

### MEASLES.

In the Army, Regulars and Volunteers, in 1899 there were reported 2,755 cases of measles, with 3 discharges for disability and 37 deaths. These are equivalent to an admission rate of 26.10 and a death rate of 0.35 per thousand of strength. The rate of fatality or percentage of fatal cases was 1.34, or 1 death in 74.5 cases. The rates of admission and death were higher among troops serving in the United States than among those on foreign service, the admission rate in the home camps and garrisons being 32.61 and the death rate 0.71 per thousand of strength.

In 1898 there were reported 7,389 cases, 7 discharges, and 70 deaths. These are equivalent to an admission rate of 49.98 and a death rate of 0.47 per thousand of strength. The percentage of fatal cases was 0.94, or 1 death in 105.5 cases. During this year also the prevalence was somewhat greater in the United States than among the troops in the islands.

As showing the care given by medical officers to prevent the spread of the infection of this disease, several instances are on record of the successful passage of troops across the Pacific with one or more cases of measles in isolation on the transport. Thus a case occurred on the transport *Pathan*, carrying the Forty-sixth United States Volunteer Infantry en route from San Francisco, Cal., to Manila, P. I., when sixteen days out from her port of departure. The patient was promptly isolated and the disease suppressed.

### SCARLET FEVER.

Only 47 cases of scarlet fever were reported as having occurred in the Army, Regulars and Volunteers, in 1898, and 22 in 1899. Seven of these were fatal in the former year; none in the latter.

### SMALLPOX.

In 1898 92 cases of smallpox were reported, with 23 deaths, and in 1899 347 cases, with 84 deaths, a total of 439 cases, with 107 deaths, during the two years. Of these cases, 342, with 99 deaths, occurred in the Philippines, the fatal cases constituting 29 per cent of the total number. Seventy-two cases, with 3 deaths, occurred in the United States, the fatal cases constituting only 4.17 per cent of the total number.

That the regular troops were better protected from the infection of smallpox than the volunteers is shown by the relative prevalence of the disease among the troops in the Philippines in 1899, where large mixed commands operated during the whole year in a dangerously infected country. Among a mean strength of 22,922 regulars there occurred 110 cases, of which 23 proved fatal, while among the volunteers, with a mean strength of 16,358, there occurred 157 cases, 55 of which were fatal. The rate of admission per thousand of strength among the regulars was 4.80, among the volunteers 9.60; and while the death rate among the regulars was only 1 per thousand men, among the volunteers this rate was 3.36 per thousand.

*Vaccinia.*—During the year 1898 6,916 men were taken on sick report as excused from duty on account of vaccinia, and of this number 1 man, belonging to a command stationed in the United States, was discharged for disability. In 1899 6,895 were taken on sick report, and 1 man in the Philippine Islands was reported as having been discharged for disability and 1 in Cuba as having died as a result of the vaccination.

The discharge reported as having taken place in the United States was that of F. B., private, Company E, Third Missouri, who was admitted into St. Agnes' (civil) Hospital, Philadelphia, Pa., August 29, 1898, suffering from "septicæmia from vaccination." He was reported discharged September 23. The discharge for disability in 1899 from troops in the Philippines really took place in the United States, the man having been left behind sick by his regiment on its departure for service in the Division of the Philippines. Private A. C., Company L, Sixth United States Infantry, was admitted into the post hospital, Fort Sam Houston, Tex., April 7, 1899, with vaccinia, complicated April 17 with axillary abscess. He was discharged June 13, 1899, "on account of septicæmic abscess of left axillary and pectoral regions due to vaccination and resulting in contraction of the fasciæ and muscles, impairing the use of the arm." The death reported from Cuba was that of A. K., private, Third Nebraska, First Division, Seventh Army Corps, who died at Havana, Cuba, 1899, from "tetanus resulting from infection from vaccination."

But besides these cases, which were attributed on the reports directly to vaccination, a careful examination of the history of cases recorded under the headings septicæmia, tetanus, etc., has shown that the operation of vaccination was the starting point in several other cases which had untoward results. These include 1 case of erysipelas ending in recovery; 1 case of discharge on account of the results of vaccination, which case is not included in the tabulation for the year 1899, as the discharge did not take place until the year 1900; 6 fatal cases of septicæmia, 5 of which occurred in a detachment of recruits at Camp Merritt, Cal., and 1 case of death from tetanus.

I. J. J. O'N., private, Company D, Ninth United States Infantry, was taken on sick report at Madison Barracks, N. Y., January 27, 1899, on account of vaccinia. He was returned to duty February 1, but on the report of the transport *Zealandia*, en route to the Philippines, his name again appears as admitted to sick report April 1, 1899, for erysipelas following vaccination. On April 7 he was returned to duty.

II. W. J. J., private, Company E, First United States Infantry, was admitted March 4, 1899, to the post hospital, Pinar del Rio Barracks, Cuba, for vaccinia, and was returned to duty on the 11th, but his name appears again on the reports as admitted March 15 with vaccinia and returned to duty on the 17th. On May 1 he was admitted to the post hospital at Guanajay, Cuba, for neuritis of the left arm from vaccination, and was transferred May 4 to the hospital ship *Missouri* as a case of false anchylosis of the left elbow following infected vaccination. The hospital ship brought him to Fort Wadsworth, N. Y., where, on the records, the remark appears, "This man has had no anchylosis since admission to this hospital, but complains of neuralgic pains in his left arm." On August 25 he was returned to his company, which appears to have been again stationed at Pinar del Rio Barracks, Cuba, for on the report from that post his name appears as admitted to sick report September 27, 1899, on account of "loss of power and sensation, left arm, secondary to severe pus infection at time of vaccination, February, 1899; hand swollen and cold." He was transferred to military hospital No. 1, Havana, Cuba, October 5. Here the record states the cause of admission to have been "loss of power and sensibility in the left arm due to vaccination." He was discharged January 13, 1900, on account of "paralysis of left arm and forearm, the result of vaccination."

III. G. S., private, Company K, First South Dakota, was admitted into regimental hospital June 26, 1898, for vaccinia, and was returned to duty June 28. He was admitted into the field division hospital, Presidio of San Francisco, Cal., July 18, 1898, with synovitis of the right knee, and was discharged on certificate of disability next day on account of chronic synovitis of the left knee joint. He did not leave the hospital, but was taken up on the records July 20 as a discharged soldier with abscess in left axilla following vaccination. The abscess was incised and curetted July 27. Septicæmia was developed August 1, and the patient died August 4 of "septicæmia following axillary abscess."

IV. A. L. H., recruit, Company E, First Colorado, was admitted to the French Hospital (civil), San Francisco, Cal., August 4, 1898, where he died next day; cause of admission, septicæmia following vaccination.

V. J. G. M., private, Company C, First Tennessee, was admitted into regimental hospital with vaccinia July 23, 1898, and returned to duty on the 24th. He was readmitted on the 31st and sent to the division field hospital of the Independent Division of the Eighth Army Corps August 1 with vaccinia complicated with abscess of the left axilla, and on August 6 with septicæmia. He is reported to have died August 16 of "septicæmia following axillary abscess."

VI. E. D., recruit, First Colorado, died August 21, 1898, of septicæmia at San Francisco, Cal. No mention is made of vaccination in the report, but the case is stated by Colonel Forwood, chief surgeon of the Department of California, as one in which the septicæmia was sequent to vaccination.

VII. A. W. S., private, Company E, First Colorado, died August 23, 1898, of "septicæmia" in the French Hospital (civil), San Francisco, Cal. The records show that the death was sequent to vaccination.

VIII. H. F. C., private, Company I, Third Texas, was admitted into the post hospital, Fort McIntosh, Tex., November 30, and died December 3, 1898, from "septic poisoning." This case was sequent to vaccination.

IX. C. R., private, Company A, Twenty-fourth United States Infantry, died of tetanus on the *City of Para*, en route to the Philippine Islands, August 5, 1899. The following report of his case was given by Capt. Charles E. B. Flagg, assistant surgeon, United States Army:

> Private C. R., colored, Company A, Twenty-fourth Infantry, from Sunnyside, S. C., was vaccinated, July 17, with glycerinated virus. The arm was scrubbed with green soap and water, then washed with bichloride solution and then with boiled water, preparatory to vaccination. After vaccination a dressing of sterilized gauze was applied and fastened by adhesive plaster. August 3 he reported at sick call, complaining of pain in his neck and stomach; he had been sick all night. He was given a cathartic and directed to report to the doctor if not feeling better in a few hours. August 4 he suffered greatly all night, but no surgeon was called. Assistant Surgeon Greenleaf saw him in the morning and diagnosed tetanus; trismus was marked. The patient was given 24 mgms. of sulphate of morphine hypodermatically and 2 grams of chloral hydrate by rectum at once. He was then put in a cabin on the main deck and kept as quiet as possible. Convulsions increased in frequency until they occurred every two minutes at 11.30 a. m., when he was given 24 mgms. of morphine hypodermatically. At noon he swallowed 45 c. c. of water. At 1 p. m. his temperature was 99.6° F.; he could not swallow. An enema of sulphate of magnesia, glycerine, and water was given and retained. An ineffectual attempt was made to pass the catheter, two strictures being encountered. A hot-water bag was put over the pubes and he urinated spontaneously sometime afterward. At 5 p. m. he was

given 1 gram of chloral, 2 grams of sodium bromide, and 30 c. c. of liquid peptonoids by means of a catheter introduced through the nose into the stomach, the nose being previously cocainized. At 7 p. m. the dose was repeated, malted milk being substituted for the peptonoids. At 9 p. m. the 5 o'clock dose was repeated. Convulsions became more frequent. At 11 p. m. 16 mgms. of morphine were given hypodermically. The bowels moved slightly, seeming to give great relief.

At 1 a. m. August 5 the patient was sleeping. At 2 a. m. temperature 100° F. At 3 a. m. 16 mgms. of morphine were given hypodermatically. At 4 a. m. the patient was sleeping. At 5 a. m. an enema of chloral, bromide, and liquid peptonoids, as above, was given. At 6 a. m. the temperature was 105.2° F., pulse 129, respiration 30, and convulsions severe. At 7 a. m. patient was sleeping. At 8 a. m. temperature 106° F., pulse 108, respiration 30. At 8.30 a. m. temperature 107° F., pulse 108, respiration 30; an ice cap was applied to the head and 16 mgms. of morphine given. At 10 a. m. temperature 107° F., pulse uncountable, respiration 40; convulsions practically continuous. He died August 5, at 11.30 a. m.

The point of vaccination presented a denuded area the size of half a dollar. There was apparently no swelling or injection of the surrounding tissues. The patient was conscious throughout the disease. He complained of great pain in his neck and abdomen. Opisthotonos was marked. The temperature which at death was 107.4° F., was 108° half an hour afterwards.

The five deaths which occurred in August, 1898, at San Francisco, Cal., indicate the use of a contaminated virus, such as gave rise during the civil war to many instances of serious results following inoculation with matter from crusts or scabs. The haste with which the volunteer regiments were aggregated at Camp Merritt, Cal., and subsequently embarked for Manila accounts for the fact that none of the regimental surgeons of the regiments in which the fatal cases occurred made special investigation into the cause of the untoward results which followed their vaccinations.

The number of men vaccinated is not known, but probably all the accepted recruits for the Regular Army—54,896 in 1898 and 47,899 in 1899—together with 250,000 United States and State Volunteers, were vaccinated or revaccinated in accordance with regulations. As vaccination on the arm often renders it inconvenient for a man to handle his musket at drill, most of the reported cases of vaccinia were, no doubt, excused from duty on account of slight inflammatory action at the vaccinated spot. The number taken on sick report in 1898 represented 46.80 per thousand of strength; in 1899, 65.33, as compared with 28.29 in the Regular Army during the year of peace, 1897, and with 34.57, the mean annual rate of admission during the previous decade.

In many instances, particularly in the Division of the Philippines, vaccination had to be repeated several times on account of the inertness of the vaccine. Lymph sent from San Francisco, Cal., lost its activity during the long voyage. Ultimately fresh vaccine was successfully produced by the board of health of Manila, and the troops in the Division of the Philippines became fairly well protected from smallpox. Lymph was supplied by this board for the vaccination of the population of many of the garrisoned towns with the result of markedly lessening the prevalence of smallpox. Major Edie, president of the Manila board, has stated that the result of the work of vaccination in Manila is shown by the records of the city board of health. For the nine months from October, 1899, to July, 1900, there were 7 deaths from smallpox in the city, whereas in the one month of March, 1899, prior to the systematic use of vaccination, there were 75 deaths from this disease.

On April 1, 1900, a vaccine farm was established at Iloilo, Panay, from which virus is supplied to all parts of the Visayas, both for the vaccination of troops and of the natives. The virus from this farm has been more effective in these southern islands than that from the board of health of Manila, as it is delivered and used without the delay incident to transportation from a distance.

The inefficiency of vaccine lymph which has been kept for some time has been repeatedly noted by our medical officers. The following, by Capt. Charles E. Woodruff, assistant surgeon, United States Army, Fort Riley, Kans., August 19, 1900, is to the point:

> In compliance with your general instructions to report upon the character of the vaccine lymph supplied, I have the honor to make the following report of our experiences with vaccination at this post during the present year, as it seems from the facts mentioned below that quite a large percentage of vaccinations as ordinarily made, perhaps 25 per cent, are worthless, and that from 5 to 10 per cent of the soldiers leave for foreign service unprotected.
>
> On account of the wide spread of smallpox last winter in this part of the country, every one who had not been recently successfully vaccinated was revaccinated. In this work I found the usual state of affairs which I have found in other army posts, namely, a large per cent of our vaccinations were successful in spite of repeated unsuccessful attempts in recent years. As small squads of recruits were coming in at all times, their vaccinations were investigated, and all cases unsuccessful elsewhere were tried over again here. Such a large per cent of these cases were successful here that it seems almost to be a rule that an unsuccessful vaccination in a recruit at the recruiting station, instead of showing immunity to variola, is far more apt to mean that the lymph used was inert. In a few squads not a single man was found protected, though all had been operated upon at the recruiting station. In a squad recently arrived from another post we thought that 22 of the 24 should be revaccinated, and we got 11 good results; 3 of these had never been successfully vaccinated in their lives and in 1 it had been tried five times unsuccessfully. Organizations seem to be in just as bad a condition. In a battery which arrived here in the spring I found 39 who apparently needed vaccination, and we got 31 good results. In these 31 there were 10 who had never been successfully vaccinated, and some of these said that they had never been vaccinated at all, even at enlistment, and all these men were traveling through a country in which an epidemic was raging.
>
> In January I vaccinated on one day 22 children with glycerinated lymph 8 weeks old. Though the tubes had been kept in a cool, dark place and had not been exposed to heat, light, nor cold, the lymph was absolutely inert, as not a case was successful, though more than two-thirds of the cases were primary vaccinations. These 22 were again vaccinated with fresh lymph, and 20 were successful. This shows that glycerinated lymph will not remain potent as long as we were first informed that it would. As a few cases of soldiers unsuccessfully vaccinated with lymph on hand three or four weeks were subsequently successful with fresh lymph, we have adopted a rule to make frequent requisitions for small amounts, and to keep on revaccinating recruits until it is successful, unless a good scar shows evidence of being less than ten years old, when we cease after two unsuccessful trials. So far we have made over 1,500 vaccinations and have found but one man who had never been successfully vaccinated in his life and in whom we have failed after repeated trials, which may, perhaps, be one of those rare cases of immunity acquired prenatally.
>
> In regard to bacterial infections the lymph is excellent. The great majority of the successful cases are nearly perfect. In only a few do we get inflamed swollen arms, indicative of other infections, and in none have we had pus formation. In the very few in which there has been sloughing and the formation of a large ulcer, there is some evidence that the infection was due to interference with the arm and did not come from the lymph

The satisfactory results produced by the general vaccination of the natives in the district of Holguin, Cuba; in Porto Rico (see my last annual report, pp. 191, 245, and 246), and in the Philippines, in suppressing the ravages of smallpox, must be regarded as one, and not the least, of the benefits brought by our occupation to the natives of these islands.

## BUBONIC PLAGUE.

During the past year bubonic plague, the black death of the Fourteenth Century, has attracted the attention of medical men and caused much anxiety to the public by its invasion of the Western Hemisphere and of the Pacific Islands, which now form part of the territory for the government of which the United States stands responsible before the world. This disease has a history which extends back into remote antiquity. Its ravages in Europe in the middle ages are matters of history, but with the advance of sanitary knowledge in the eighteenth and nineteenth centuries this deadly disease lost its hold upon what may be regarded as the civilized communities of the world. An outbreak occurred occasionally in certain localities into which the infection was introduced, as in Marseilles, in 1720, where a severe epidemic occurred in which the mortality was estimated as being between 40,000 and 60,000. Other local epidemics occurred subsequently to this date. Thus in 1771 nearly one-fourth of the population of Moscow was destroyed by the disease; but on the whole the disease receded from Europe until it found a resting place on the Volga, in southeastern European Russia, with its headquarters farther east in Asia, extending into the Chinese dominions. It seemed as if modern sanitary conditions had put an end to the ravages of the plague, as they had taken the deadly sting from typhus fever and repressed the propagation of cholera. Nevertheless a recrudescence of the disease occurred in 1894 which alarmed the whole of the civilized world. The last appearance of oriental plague in Europe, until this recent recrudescence, was an outbreak on the banks of the Volga in 1878–79. The disease had previously prevailed in a mild form in the vicinity of Astrakhan, and was probably introduced from that locality. An interesting fact in connection with this epidemic is that in Astrakhan the disease was so mild that no death occurred, and that the earlier cases on the right bank of the Volga were of the same mild form, but that the disease there increased rapidly in severity and soon became so malignant that scarcely any of those attacked recovered. This is to some extent the history of epidemics elsewhere, and not only of plague, but of other infectious diseases, such as typhus fever, cholera, and yellow fever. In all of these diseases the outset of an epidemic may be characterized by cases so mild in character that they are not recognized, and during the progress of the epidemic many such cases may continue to occur. These cases are evidently especially dangerous as regards the propagation of the disease, for when they are not recognized no restriction is placed upon infected individuals, although they may be sowing the the germs broadcast.

The termination of an epidemic in the presanitary period depended to a considerable extent upon the fact that those who suffered a mild attack acquired thereby an immunity, and that when the more susceptible individuals in a community had succumbed to the prevailing epidemic there was a necessary termination of the epidemic for want of material. This is illustrated in such cities as Havana and Rio Janeiro, where yellow fever is an endemic disease. The natives of these cities have an immunity which probably results from their having suffered a mild attack during childhood, and the epidemic prevalence of the disease depends upon the presence of "unacclimated" strangers.

The disease indeed seemed to be almost a thing of the past and no longer gave any uneasiness in the countries of Europe which had formerly suffered from its ravages, when in February, 1894, it made its appearance in the city of Canton, China, and three months later in Hongkong. The disease is known to have been epidemic in the province of Yunnan, which is about 900 miles distant from Canton, since the year 1873, but it attracted little attention until the lives of Europeans living in the city of Hongkong were threatened by the outbreak of an epidemic among the Chinese residents of that place. Many thousands of deaths occurred in Canton during the three months which elapsed after its introduction to that city before it effected a lodgment in Hongkong.

Fortunately this outbreak gave the opportunity for competent bacteriologists to make scientific investigations relating to the specific cause of this scourge of the human race and to the demonstration that it is due to a minute bacillus. The discovery was first made by the Japanese bacteriologist Kitasato, who had received his training in the laboratory of the famous Prof. Robert Koch, of Berlin. This discovery was made in the month of June, 1894, in one of the hospitals established by the English officials in Hongkong. About the same time the discovery was made, independently, by the French bacteriologist Yersin. From this time the study of plague has been established upon a scientific basis, and very material additions have been made to our knowledge with reference to the prevention and treatment of the disease. We have learned that certain of the lower animals, including rats and mice, are very susceptible to infection, and that they play an important part in the propagation of the disease; also that the germs are found not only in the blood and in pus from suppurating buboes, but also in the discharges from the bowels of infected individuals. This being the case, it can readily be seen how important a strict sanitary police is in arresting the spread of an epidemic. As in other filth diseases in which the germ is present in the excreta of the sick, insects, and especially fleas and house flies, probably play an important part in the spread of the disease.

From Hongkong the infection was carried to Bombay, in which in the last week of December, 1896, the mortality was 1,384. In January, 1897, the mortality was nearly 5,000, and in February 4,600, although by this time the population of the city had been diminished by about one-half by the flight of its inhabitants. In March there was a noteworthy reduction in the number of deaths, and this continued during April and May, and in August the disease had almost disappeared, but early in 1898 there was a recrudescence of the epidemic, and in November of that year the total mortality had reached 26,423. The disease extended throughout the Bombay Presidency, following, as a rule, the lines of the railway. In this way it reached Surat and Buroda, on the northern line, Poona, Carad, and Miraj, on the southern, Calcutta and Nasik on the eastern, and Scholapur and Hyderabad upon the southeastern. The total mortality in the Presidency of Bombay up to November 11, 1899, was 164,083.

Thence the plague was introduced into Alexandria, in Egypt, and in August, 1899, it made its appearance in Oporto, Portugal. In October, following, it crossed the Atlantic and invaded American shores at Santos, Brazil. Cases of plague from Santos were received at the New York quarantine station and there stopped. In December, 1899, the disease was discovered in Honolulu, H. I., apparently introduced from the Orient, but it was confined to the Chinese quarter, and the vigorous repressive measures instituted by the local authorities prevented its general spread. No case occurred among the military population on the island.

Reports were received also concerning the presence of the disease in the Chinese quarters of San Francisco, Cal., but the energetic action of the health office of the city suppressed the infection.

Ultimately also in December, 1899, plague appeared in Manila. Two cases ending fatally occurring in the same house were reported as typhoid fever; a third case seen during life was recognized as plague. Other cases occurred in the same neighborhood. A house to house inspection was started at once. One death occurred in December, 1899, 11 in January, 1900, 35 in February, 49 in March, 44 in April, 17 in May, and 11 in June, while during each of these months from 40 to 80 Chinese died from causes unknown, they having been without medical attendance. The cases of plague reported numbered 225, of which only 58 recovered.

Only 1 American died of the disease, an employee of the quartermaster's department. His case was reported from military hospita No. 3, on May 20. He died next day at the pest hospital. Ward E, of hospital No. 3, in which the case was discovered, is 92 by 34 feet. It contains 55 beds, of which 53 were occupied at the time. It is elevated 3 feet above the ground, and has about 57 square feet and 800 cubic feet of air space per patient. The ventilation is perfect, as the broad verandas, which surround the ward, permit the 14 windows to be always open. The ward has no direct communication with any other, and its basement is well ventilated. It was not considered necessary to subject the whole of hospital No. 3 to quarantine; but the following circular was issued by Capt. John S. Kulp, assistant surgeon United States Army, commanding the hospital:

> All passes from this hospital are suspended until further notice.
>
> Natives who are not employees will not be permitted to pass the sentries.
>
> E ward is hereby declared quarantined, and all persons are forbidden to hold communication with its occupants.
>
> No officer, soldier, or civilian will enter the hospital without the authorization of the officer of the day.

A strict quarantine was established in regard to the infected ward, every man being personally instructed in his duties, the main provisions of which were included in the following orders:

SPECIAL ORDERS NO. 68.

1. Ward E, its personnel, and its contents are hereby declared in quarantine.
2. No person, except the ward surgeon, will be permitted either ingress or egress. There will be a sentry posted at either door to enforce this order, and two men will be detailed as intermediate food and refuse carriers.
3. All supplies will be brought to a table (outside the south door), placed thereon, and left there. They will be taken from there to the doorsteps by the two intermediate carriers and left there. They will then be taken inside the ward by the men therein. *No person will go within 20 feet of the intermediate carriers, or the inmates of the ward.*
4. Soiled linen will be placed in a 1:100 trikresol solution, and after four hours removed from the ward. Food containers will be set outside as soon as emptied, and will be scalded out by the kitchen force as soon as received. Stools and urine will

be disinfected by dry earth and trikresol in the ward rear, and all garbage properly disinfected by trikresol or lime before being removed.

5. The ward storeroom will be closed until further orders.

6. No dishes, furniture, nor reading matter will be removed from the ward.

7. The floor of the ward will be well mopped daily with a 1:100 solution of trikresol, and each patient will be given a daily sponge bath, using 1:4000 bichloride for that purpose. The ward master will keep a check of these baths.

8. Under no circumstances will natives or pet animals be admitted to the ward or allowed near it.

SPECIAL ORDERS No. 69.

1. The enlisted men of this detachment will bathe in bathroom No. 2 daily, so long as the present quarantine exists. Each man will bathe at the most convenient time, and will report thereafter to the bath steward for check.

2. Ward masters (except of E ward) will provide the bath steward with a daily check-list of such of their convalescents as are able to use bathroom No. 1. This list will be checked and returned. All patients unable to bathe in the bathroom will receive a daily bath in their wards.

3. Ward surgeons will impress upon their subordinates the necessity of absolute cleanliness of person and surroundings. All soiled linen will be immersed in 1:100 trikresol in the linen room for four hours before being turned over to the laundry.

It will be observed that no person was permitted entrance to or egress from the ward. The "intermediate carriers" were themselves isolated separately from the inmates. All received explicit instructions as to frequent hand and face washing, especially before eating, and the rationale of the whole quarantine was carefully explained.

The report of Acting Asst. Surg. Lester W. Lord, in charge of the ward at this time, was as follows:

I have the honor to report concerning the recent quarantine of ward E. Upon taking charge of the ward on May 20, after the establishment of the quarantine, all orders were carefully explained to its inmates. Since then all occupants have taken a daily sponge bath of 1:4000 bichloride; all soiled linen has been placed in a 1 per cent solution of trikresol for four hours before its removal; the floors have been mopped daily with the same solution; and excretions disinfected with pure trikresol, covered with dry earth and lime, and then removed. The guards placed at the doors allowed none to approach within 20 feet, save the intermediate carriers, whose office was to bring the supplies to the doorsteps, and to remove the waste.

On May 21 and 22 all inmates received a subcutaneous gluteal injection of plague prophylactic. Twenty-one of these received 1 c. c. each of the marine-hospital product, and the remainder 5 c. c. each of the Hongkong preparation. Very little inconvenience was experienced, although in a few cases there was a slight rise of temperature and a little soreness at the site of the inoculation. Both passed away in from twelve to twenty-four hours. No puncture abscesses occurred.

On the 23d two suspected cases were sent to the plague hospital, but were subsequently discharged as noninfected. Their mattresses were burned, the bed frames washed in 1:500 bichloride, and their personal effects wrapped in cloths moistened with the same solution.

The ward surgeon, before entering the ward, discarded superficial clothing, and wore a sheet covering the body from the neck to the heels. Each time after leaving the ward he subjected himself to a sponging of the face and hands in a 1:1000 bichloride solution. This was followed by a shower bath and an entire washing with soap and water.

After a period of eleven days the quarantine was raised on the recommendation of a board of three medical officers, by whom each patient in the ward was examined. Captain Kulp made the gratifying statement, in his report, that practically every man of the hospital corps appeared anxious to secure experience in nursing this disease, the spread of which was prevented by the intelligent cooperation of the officers and men of the hospital.

A second case in a quartermaster's employee was reported by the health board of Manila. This case is said to have recovered. It occurred in the quartermaster's corral on May 27. There were more than 400 employees in and about this corral. Two hundred and forty of them slept in one set of quarters, a bunk house of nipa and bamboo. Few of them paid any attention to personal hygiene, and their sanitary surroundings were miserable. Major Edie's opinion, from his experience as health officer of Manila, is that little difficulty will be found in controlling the plague in any intelligent community with modern sanitary conditions. His report, which deals with smallpox and leprosy, as well as plague, is submitted in this place:

I have the honor to make the following report on the work of the board of health of the city of Manila. My duties with the board of health were pursuant to the following orders: Special Orders No. 181, paragraph 10, headquarters Department of the Pacific and Eighth Army Corps, Manila, P. I., July 5, 1899, and Special Orders No. 142, paragraph 5, headquarters provost-marshal-general, Manila, P. I., July 31, 1899. Before receiving the first order I was taken down with typhoid fever, and had a relapse a few days after complying with the second, so that my duties with the board of health really began on August 28, 1899.

The medical personnel of the board for the past year has been as follows:

Lieut. William J. Calvert, assistant surgeon, United States Army, in addition to his other duties as regimental surgeon, Sixth United States Artillery, and attending surgeon on the prisoners of war, was assigned to duty on the board of health, July 31, 1899. He was relieved from his other duties January 7, 1900, and, besides directing the bacteriological department of the municipal laboratory, has had charge of the plague hospital.

Capt. Charles Lynch, assistant surgeon, United States Army, reported for duty with the board, December 24, 1899; Maj. Ira C. Brown, surgeon, United States Volunteers, January 9, 1900; Acting Asst. Surg. Julius C. LeHardy, United States Army, January 26, and Acting Asst. Surg. Harry L. Gilchrist, June 16, 1900, the latter relieving Major Brown who had been ordered for temporary duty with the transport *Hancock*. During the temporary absence of Assistant Surgeon Calvert in Japan, in March and April, Acting Asst. Surg. Joseph J. Curry, United States Army, conducted the bacteriological department, made all autopsies, and rendered valuable service in other ways.

Dr. C. H. Pardo-Tavera and Dr. Ariston Bautista Lim, both of Manila, have been honorary members of the board of health since its organization in September, 1898.

As originally organized the city had 10 districts with 8 municipal midwives, and for each district a native physician, whose duties were to attend to the indigent sick, report unsanitary conditions and infectious diseases, and investigate and give certificates of death to all cases that have died without medical attendance. By the extension of the city limits to Pandacan and Santa Ana a new district was created, which was provided with a physician, a native of the district.

Besides the general functions belonging to a board of health in supervising all works and conditions affecting the public health, the board had general supervision over the charitable institutions, prisons, and venereal hospital, and the direct control of the vaccine farm, municipal laboratories, bacteriological and chemical, which the board organized, free dispensary, hospitals for leprosy, smallpox, and bubonic plague, and much other work that the individual members were from time to time called upon to do.

*Registration of births, marriages, and deaths.*—The department of registration of births, marriages, and deaths in former times was in charge of the parochial priests. The board has endeavored to keep these records, but it only pretends to accuracy in the records of deaths. It also required the registration of physicians, pharmacists, and dentists practicing their professions. It was with some difficulty that the superintendents of the parochial cemeteries could be prevented from interring bodies without a burial permit and make the weekly return of burials required. After a clear understanding of the necessity of these requirements the regulations were complied with.

A municipal dispensary, where the indigent sick can obtain medicines free of cost, has been in operation since December, 1899. Nevertheless the majority of births and deaths occur without medicines or medical treatment.

*Vaccination and smallpox.*—The board continued the work of vaccination and revaccination begun by Major Bourne. The result of this work is shown in the table of mortality statistics. For the nine months from October, 1899, to July, 1900, there were 7 deaths in this city from smallpox, whereas in the month of March alone, in

1899, there were 75 deaths from this disease. The subjoined table shows the number of vaccinations, by months. This work was done under difficulties, as the authorities thought it advisable not to permit forcible vaccination. Many cases of smallpox came into the city from the country districts, and the board sent its vaccinators to all outlying towns and villages for the purpose of vaccinating every inhabitant. Records of these vaccinations were not returned except from the town of Malabon. After the dispersion of the Filipino army, as the country became opened up, the military surgeons in every district, under directions from the chief surgeon's office, began the vaccination of the inhabitants, and the output of the vaccine farm had to be largely increased, as is shown in the attached table. This increase was made with little additional expense, and every demand for vaccine virus was promptly met. When the present wet season is over, and this subject of vaccination in the provinces is vigorously taken hold of and carried on until every person in these islands has been vaccinated and revaccinated, the vaccine station will be prepared to furnish the necessary amount of virus.

*Leprosy.*—Leprosy was introduced here in 1633. The Emperor of Japan sent a ship with 150 lepers as a present, to be cared for by the Catholic priests. These lepers were allowed to land, and as no practical methods were ever adopted to eradicate the disease or prevent its spread, it steadily increased, until now, according to the estimates of the Franciscan fathers, there are not less than 30,000 lepers in the archipelago, the larger number being in the Visayas. Under the Spanish régime the order of the Franciscans had charge of the charity work among the lepers. Several hospitals and asylums were built, the largest of which, San Lazaro Hospital, is located in Manila, and has a capacity for 400 patients. When a house-to-house inspection was inaugurated last January, more than 100 lepers were found concealed in houses and were sent to San Lazaro Hospital. Many others escaped into the surrounding country. The necessity of the segregation and isolation of the lepers on one of the islands was early recognized and agitated by the board of health. As soon as the conditions permitted, the authorities appointed a commission to select a suitable island or islands for this purpose and to present plans and estimates for buildings and to formulate the necessary regulations. This commission is now engaged in this work.

*Bubonic plague.*—The first case of plague in this city of which we have any knowledge occurred in No. 14, Calle Legaspi, Intramuros, on December 29, 1899. There was a death in this house, the diagnosis on the death certificate being typhoid fever. Two days later, December 31, a second death was reported from the same house with a similar diagnosis. These two cases died without medical attendance, and the diagnosis was made by the municipal physician of the district after death. On January 2, a boy was removed from this house to the San Juan de Dios Hospital, having been taken sick the day previous, and the notification required in cases of infectious diseases reached this office on the 2d, the diagnosis being typhoid fever. Assistant Surgeon Calvert and myself visited this boy at the hospital and found him presenting the clinical aspect of plague. The inflamed gland was in the left femoral group; it was about the size of a pigeon's egg, and very tender to the touch. The boy was at once removed to the pest hospital, which, in anticipation of an increase of smallpox, had been constructed of tents, as the authorities had decided that the state of the public funds did not justify the expenditure necessary to erect a pest hospital. On January 3, 2 cases were discovered at No. 8, Calle Legaspi; on the 6th, 1 case at No. 6, Legaspi; on the 13th, 2 more cases developed at No. 8, Legaspi. Bacteriological examinations and culture growths were made in nearly all the cases. A report of this work, with a description of the clinical features of the plague as it appears here, will be made by Assistant Surgeon Calvert.

The methods adopted to control and eradicate the disease were:

1. The prompt detection and isolation of plague cases.
2. Removal of persons who had been in close communication with an infected case to the suspect wards at the hospital.
3. Removal of all other inmates in the infected houses to the detention wards at the hospital, or quarantining such inmates in the house for 14 days.
4. Thorough disinfection and redisinfection of the house, its contents, and inmates; clothing and bedding disinfected by steam. All articles that could not be thoroughly disinfected were burned.
5. The inspection of all dead bodies of Chinese.
6. The distribution of rat poison in all houses by the inspectors themselves.
7. The disposition of the dead: Cremation principally. On account of the religious prejudices of the Chinese, their dead—the coffins being filled with disinfectants and quicklime—were buried in the "plague plot."

To carry out the first provision, a house-to-house inspection was inaugurated at once. This is still continued in certain sections of the city. With the assistance of Major Tiernan, chief of police, a corps of 100 inspectors was organized within 36 hours. These inspectors were Filipinos, for the most part medical students. It was impossible to obtain soldiers for inspectors. The city was divided into 10 districts and each district into three subdistricts, and instructions and regulations written in Spanish were furnished each inspector. Ambulances and carts for carrying disinfectants were provided. This force on January 9, 1900, was turned over to Maj. Ira C. Brown, surgeon, United States Volunteers, and, under the direction of that energetic and efficient officer, did excellent service, much better than we had hoped for. No one who has not been in close touch with an Eastern city and the mode of life of its inhabitants can realize what a sanitarian has to wrestle with in this country. The density of population and the consequent overcrowding in the city is appalling, and, if it continues, is sure to bring disaster. Major Brown, in connection with his sanitary inspectors, utilized the fire department to clean a large part of the city. All drains were opened and flushed, the interiors and rears of houses were cleaned and whitewashed, and an immense amount of other work was accomplished by this officer. At the same time the regular sanitary department was doing its usual good work.

For the prompt detection of plague cases among the Chinese and the prevention of concealed cases much is due to the Chinese consul and Mr. Palanca. The latter is especially influential among his fellow-countrymen from Amoy. At his instance the Chinese merchants furnished from their own number 40 inspectors, who made daily house-to-house inspections in the Chinese districts, and I do not believe that any case of sickness escaped them. This work was continued for two months at their own expense. The Chinese also built a pest hospital for the care of their own people and have paid all of its running expenses. Acting Assistant Surgeon Le Hardy, a very energetic and capable young officer, was assigned to duty in the Chinese district, and every Chinaman dead of any disease was inspected by him. The disease has been confined almost entirely to the native and Chinese populations. Only two white men have contracted the disease. These were teamsters in the quartermaster's corral. The first of these cases was reported on the night of May 20 from one of the military hospitals as a suspicious case, and was removed to the pest hospital, where he died the next day, May 21. The autopsy and culture growths proved it to be a case of plague. The second case occurred in the bunk house of the corral on May 27. This case recovered. There were more than 400 employees in and about this corral. Two hundred and forty of them slept in one bunk house made of nipa and bamboo. Few of them paid any attention to personal hygiene, and their sanitary surroundings were miserable. Every condition except famine favorable to an outbreak of the disease among these people was present. That no outbreak did occur is due to the prompt and efficient methods adopted, which were carried out under the personal supervision and direction of Assistant Surgeon Lynch, who, here as elsewhere, proved himself to be a willing and capable officer. No infection occurred in our forces handling cases of plague, either in or out of the hospital. The opinion I have formed of plague from the experience of the past six months is, that little difficulty will be experienced in controlling it in any intelligent community with modern sanitary conditions. The board made early application to the government laboratories in Bombay for Haffkine's vaccine material. Some was obtained from the marine-hospital surgeon, who has also recently received some Yersin serum. It is almost impossible, without force, to use the Haffkine vaccination on Chinese or natives. A thorough test has not been given to either the Haffkine material or the Yersin serum, but we have not been favorably impressed with either. Dr. Calvert at a later date will make a full report on this subject, also on his work in this line.

I can not speak in too high terms of the absolute fearlessness, energy, and cheerful cooperation of every medical officer associated with me in this work, and of the faithful and efficient services of Acting Steward Thomas McL. Van Wyck and Private James F. Beahan, Hospital Corps, United States Army, who have been on duty with the board of health.

Respectfully,

GUY L. EDIE,
*Major and Surgeon, U. S. V., President Board of Health.*

## The following papers formed appendices to Major Edie's report:

*Amount of vaccine virus furnished by the board of health of Manila to the Army and Navy of the United States, and to the native inhabitants of the archipelago outside of the city of Manila, from July 1, 1899, to June 30, 1900.*

| Date. | Army and Navy. | Natives. | Total. |
|---|---|---|---|
| 1899. | | | |
| July | 6,520 | 700 | 7,220 |
| August | 3,120 | 3,720 | 6,840 |
| September | 5,230 | 3,100 | 8,330 |
| October | 6,720 | 4,310 | 11,030 |
| November | 2,830 | 7,070 | 9,900 |
| December | 5,900 | 2,230 | 8,130 |
| 1900. | | | |
| January | 21,700 | 5,800 | 27,500 |
| February | 24,020 | 36,900 | 60,920 |
| March | 16,590 | 129,140 | 145,730 |
| April | 8,230 | 137,910 | 146,140 |
| May | 8,410 | 102,000 | 110,410 |
| June | 6,180 | 73,660 | 79,840 |
| Total | 115,450 | 506,540 | 621,990 |

*Report of the number of vaccinations in Manila and suburbs, Presidio, Bilibid, and Malabon from July 1, 1899, to June 30, 1900.*

| Date. | Manila and suburbs. | Presidio. | Bilibid. | Malabon. | Total. |
|---|---|---|---|---|---|
| 1899. | | | | | |
| July | 9,148 | | | 4,167 | 13,315 |
| August | 15,023 | | | | 15,023 |
| September | 8,297 | | | | 8,297 |
| October | 6,159 | | | | 6,159 |
| November | 5,588 | | 783 | | 6,371 |
| December | 4,228 | 318 | | | 4,546 |
| 1900. | | | | | |
| January | 5,084 | | | | 5,084 |
| February | 4,455 | | | 3,046 | 7,501 |
| March | 7,005 | | | 5,143 | 12,148 |
| April | 15,036 | | | 5,576 | 20,612 |
| May | 8,437 | | | | 8,437 |
| June | 5,561 | | | | 5,561 |
| Total | 94,021 | 318 | 783 | 17,932 | 113,054 |

*Record of mortality by months from October, 1899, to July, 1900.*

[Population estimated at from 350,000 to 600,000.]

| Month. | Number of burials with permits. | Number of burials without permits. | Total number of deaths. | With medical attendance. | Without medical attendance. | Children under 5 years. | Number of deaths from— Tuberculosis. | Beriberi. | Malarial fevers. | Diarrheal diseases. |
|---|---|---|---|---|---|---|---|---|---|---|
| October | 942 | 242 | 1,184 | 224 | 960 | 450 | 65 | 55 | 29 | 72 |
| November | 1,090 | 145 | 1,235 | 207 | 1,028 | 515 | 103 | 160 | 34 | 136 |
| December | 1,092 | 70 | 1,162 | 232 | 930 | 502 | 115 | 143 | 36 | 157 |
| January | 1,055 | | 1,055 | 335 | 720 | 396 | 126 | 121 | 56 | 126 |
| February | 884 | | 884 | 315 | 569 | 344 | 119 | 71 | 46 | 131 |
| March | 887 | | 887 | 302 | 585 | 371 | 128 | 38 | 43 | 130 |
| April | 805 | | 805 | 263 | 542 | 354 | 126 | 27 | 30 | 119 |
| May | 724 | | 724 | 238 | 486 | 344 | 119 | 17 | 30 | 100 |
| June | 599 | | 599 | 181 | 418 | 231 | 91 | 10 | 34 | 102 |
| Total | 8,078 | 457 | 8,535 | 2,297 | 6,238 | 3,507 | 992 | 642 | 338 | 1,073 |

*Record of mortality by months from October, 1899, to July, 1900*—Continued.

| Month. | Number of deaths from— Acute lung diseases. | Typhoid fever. | Smallpox. | Bubonic plague. | Leprosy. | Measles. | Remarks. |
|---|---|---|---|---|---|---|---|
| October | 60 | 4 | ........ | ........ | 8 | ........ | Chinese not being on record, 72 carried as without medical attendance. |
| November | 100 | 2 | 1 | ........ | 6 | ........ | Chinese not being on record, 75 carried as without medical attendance. |
| December | 72 | 4 | ........ | 1 | 13 | ........ | Chinese not being on record, 62 carried as without medical attendance. |
| January | 75 | 2 | 3 | 11 | 7 | 2 | Chinese regularly on record from January 15, 65. |
| February | 83 | 6 | 2 | 35 | 4 | 1 | Chinese, 80. |
| March | 68 | 5 | 1 | 49 | 3 | 1 | Chinese, 72. |
| April | 61 | 6 | ........ | 44 | 1 | ........ | Chinese, 63. |
| May | 66 | 8 | ........ | 17 | 2 | ........ | Chinese, 39. |
| June | 45 | 4 | ........ | 11 | 2 | ........ | Chinese, 35. |
| Total | 630 | 41 | 7 | 168 | 46 | 4 | |

*Record of mortality by nationality from October, 1899, to July, 1900.*

[Population estimated from 350,000 to 600,000.]

| Month. | Filipinos. | Spanish. | American. | Swiss. | Italian. | French. | Portuguese. | Austrian. | Chinese. | Malay. | German. | Japanese. | British Indian. | Australian. | Cuban. | Guam. | Scotch. | English. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| October | 930 | 4 | 2 | 1 | ... | ... | ... | ... | 4 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 942 |
| November | 1,071 | 6 | 2 | ... | 1 | 1 | 1 | ... | 5 | 2 | ... | ... | ... | ... | ... | ... | ... | 1 | 1,090 |
| December | 1,069 | 14 | 2 | ... | ... | ... | ... | 1 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 1,092 |
| January | 974 | 11 | 3 | ... | ... | ... | ... | ... | 65 | ... | 1 | 1 | ... | ... | ... | ... | ... | ... | 1,055 |
| February | 788 | 13 | 1 | ... | ... | 1 | ... | ... | 80 | ... | ... | ... | ... | ... | ... | ... | ... | 1 | 884 |
| March | 802 | 10 | 1 | ... | ... | ... | ... | ... | 72 | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 887 |
| April | 731 | 6 | 1 | ... | ... | ... | ... | ... | 63 | ... | ... | ... | 1 | 1 | 1 | ... | ... | 1 | 805 |
| May | 674 | 4 | 2 | ... | ... | ... | ... | ... | 39 | ... | ... | ... | ... | ... | ... | ... | ... | 5 | 724 |
| June | 552 | 8 | 1 | ... | ... | ... | ... | ... | 35 | ... | ... | ... | ... | ... | ... | 1 | 1 | 1 | 599 |
| Total | 7,591 | 76 | 15 | 1 | 1 | 2 | 1 | 1 | 366 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 15 | 8,078 |

*Report of cases of bubonic plague, deaths, recoveries, disinfection of houses and the placing of rat poison, from January 1 to June 30, 1900.*

| Month. | Whole number of cases. | Whole number of deaths. | Cases reported each month. | Cases recovered. | Number of deaths. | Number of houses disinfected. | Number of houses in which poison was placed.[1] |
|---|---|---|---|---|---|---|---|
| January | 18 | 11 | 18 | 7 | 11 | 26 | ........... |
| February | 66 | 46 | 48 | 13 | 35 | 58 | ........... |
| March | 130 | 95 | 64 | 15 | 49 | 54 | ........... |
| April | 184 | 139 | 54 | 10 | 44 | 499 | ........... |
| May | 206 | 156 | 22 | 5 | 17 | 361 | ........... |
| June | 225 | 167 | 19 | 8 | 11 | 143 | 2,039 |
| Total | 829 | 614 | 225 | 58 | 167 | 1,141 | 2,039 |

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[1] As no records were kept of the number of houses in which poison was placed, to June, it is impossible to fill out report, but the month of June can be taken as a fair average for the preceding months, as a like amount of poison had been used since January 1.

*Report of cases of bubonic plague, deaths, recoveries, disinfection of houses and the placing of rat poison, from January 1 to June 30, 1900*—Continued.

| | Cases. | Deaths. |
|---|---|---|
| Natives | 63 | 51 |
| Chinese | 160 | 115 |
| Americans | 2 | 1 |
| Total | 225 | 167 |

## REPORT OF FIRST LIEUT. W. J. CALVERT, ASSISTANT SURGEON, UNITED STATES ARMY, ON THE CASES ADMITTED INTO THE PLAGUE HOSPITAL.

MANILA, P. I., *July 13, 1900.*

SIR: In compliance with your instructions of July 2, 1900, I have the honor to make the following preliminary report:

The larger proportion of cases have been admitted to the Plague Hospital a few hours before death; a few cases, however, have been observed almost from the onset of the disease.

The period of incubation varies from at least two to ten days. Fever, headache, and oftentimes tenderness of the lymphatic glands are the first symptoms noted. The temperature rises suddenly. The course of the fever is irregular. It may be fairly regular in some cases, while in others the curve is remittent or intermittent in type. Frequently the temperature drops to normal, followed by a sudden rise to 9.5°C.–40.5°C., and death. The remittent type, closely resembling the septic type, seems to be most common.

Headache is quite constant, severe, and persistent.

The tenderness of the lymphatic glands may develop with the fever; in other cases no tenderness or enlargement of the glands can be discovered until a few hours before death.

On inspection the patient is found lying on the side, with the thighs flexed on the trunk to relieve the pain, and with the eyes turned away from the light; if lying on the back, the thighs remain flexed. None of the cases have shown any lesions of the skin peculiar to plague, except as noted in the post-mortem records. The hemorrhages, if any, develop later in the course of the disease.

The facial expression is that of intense pain, frequently mixed with anxiety and fear. The eyes, as a rule, are rather dull, but in a few cases no change in expression occurs and the eyes are bright.

The lips are usually dry and the tongue heavily coated, white, often furrowed, while the edges are clean, bright red, and œdematous.

Thus far I have seen nothing particular in the tonsils.

The thorax in all of the cases was clear, excepting a few râles, which had no particular significance. The respiration is usually rapid, shallow, and oftentimes labored.

The pulse varied, naturally, with the febrile condition of the patient, and in no case presented any peculiarity. As a rule the pulse was rapid, easily compressed, and oftentimes stringy. The heart's action is feeble.

The abdomen presented nothing of importance. One case presented pain in the right inguinal region, due to the enlarged iliac glands. The genitals showed nothing of importance.

The blood showed marked increase of polymorphonuclear leucocytes.

The patient is usually constipated and the urine scanty.

The mental condition of the patient is very variable. Frequently it is benumbed at other times the patient is semicomatose and very restless. Rarely is the patient irrational.

Vomiting is often present. It is accompanied by no pain and does not seem to indicate in any way the condition of the stomach or the severity of the disease.

The lymphatic glands enlarge rapidly. They are hard, in the early stages isolated, and freely movable. The glands of the same group rapidly become infected. The blocking of the lymph channels causes marked œdema in the tissues around the infected glands. The inflammation rapidly extends into the surrounding tissue and to the skin, forming one large, irregular, immovable mass. In some cases the skin is reddened, but in none of the cases have hemorrhages or carbuncles developed. The skin is often œdematous. Neither the time of development nor the degree of tenderness in the glands is constant. The tenderness of the glands may be among the very first symptoms observed. On the other hand, in some cases it is not noticed until a few hours before death. The pain is, as a rule, exquisite and the patient invariably assumes a position in bed best suited to relieve as far as possible all pressure on the glands. The degree of tenderness does not seem to depend entirely on the degree of enlargement of the glands.

Thus far 25 post-mortems have been made on cadavers dead from pest. A brief synopsis only of these will be given, as the greater part of the work can not be reported at this time.

The facial expression seen on those dead of plague is similar to that described above.

In 6 of the 25 autopsies subcutaneous hemorrhages were observed; only one however was well marked. This case presented numerous small hemorrhages on the face, upper extremities, and trunk, most marked on right side.

Owing to the frequent glandular enlargements met with in this region, the record of enlarged glands at post-mortem from pest can not be entirely relied upon per se. Only the larger glands were noted. The following records from enlarged glands gives the complete glandular enlargement. As will be seen, frequently two or more groups of enlarged glands occurred in the same subject.

In the 25 autopsies, enlarged glands were found five times in the neck, or 20 per cent; six times in the right axilla, or 24 per cent; seven times in the left axilla, or 28 per cent; sixteen times in the right inguinal and femoral region, or 48 per cent; fifteen times in the mesentery, or 60 per cent; and six times in the iliac glands, or 24 per cent. During life the glands are easily felt and oftentimes easily seen, but however large during life, at the autopsy the swelling seems to have largely diminished or entirely disappeared.

On section the tissue surrounding the glands is infiltrated with a straw-colored gelatinous serum. The extent of this infiltration varies, frequently extending over an area having a radius of 6 or 7 cm. This infiltrated tissue is often hemorrhagic, and owing to the enormous venous distension, bleeds on the slightest injury. The condition of the glands varies according to duration of the disease. In rapidly fatal cases the glands are only slightly enlarged, hemorrhagic; while in the cases of longer standing the glands are very large, hard to the touch, but on section found to be soft in the center. In 6 of the 25 autopsies, the chain of glands extending from the inguinal group into the abdomen, along the iliac group to the left side of the spinal column, were greatly enlarged and surrounded by widespread, retroperitoneal hemorrhages. In one case the hemorrhage extended throughout the entire retroperitoneal tissue. These glands seemed to be enlarged out of all proportion to the external glands.

In rapidly fatal cases the plague organism was obtained in pure culture from enlarged glands wherever found; in cases of longer standing mixed cultures were always obtained.

The peritoneal cavity and pelvis, except in the 6 cases showing enlarged retroperitoneal glands and hemorrhages, were normal, excepting an occasional punctate hemorrhage and distended venule.

The spleen in all cases was soft and of a brick-dust color. It was greatly enlarged in 18 cases, moderately enlarged in 1, practically normal in 2, and very small in 1. The weights were not taken.

The liver and kidneys were markedly congested.

The stomach when examined showed mucous gastritis with more or less punctate hemorrhages. The intestines frequently showed some enteritis with a few small hemorrhages, otherwise normal.

The heart was in all cases greatly distended, especially the right side. Subpericardial hemorrhages were noted in 13 cases. The heart muscle was pale and flabby.

The lungs in 9 cases showed subpleural hemorrhages and a varying degree of congestion and œdema in all cases; in 3 cases broncho-pneumonia was seen.

From the enlarged glands spleen and blood cover slip preparations show a short round-end bacillus, occurring singly, in pairs end to end, in chains of from four to six, and oftentimes in small clumps. These organisms take all the ordinary stains and rapidly decolorize by Gram. The poles of the bacilli often take a deeper stain than the center, frequently resembling a diplococcus.

Forty-eight-hours-old colony is small, round, even-edged, semitranslucent, and of a milky-white color; by transmitted light slightly bluish.

On neutral plain agar the organism produces a fairly abundant growth, which at twenty-four hours is semitransparent and slightly whitish; at forty-eight hours it is of a more opaque white color and of a glutinous consistency.

On glucose agar slants the growth is not so abundant as on plain agar. In stab culture no gas is produced. The growth extends along the entire stab and is of a whitish color.

On acid potato the growth is scanty, moist, and after forty-eight hours of a slightly yellowish color.

Milk is not coagulated. Litmus milk is not reddened, but old cultures are slightly paler than the original tube.

Cover-glass preparations made from culture tubes show a short, round-end bacillus, occurring singly, in pairs, and in chains of from 4 to 6 bacilli. These organisms stain by all of the ordinary stains and rapidly decolorize by Gram's stain.

House rats inoculated subcutaneously with this organism die in from thirty to sixty-five hours. At autopsy the inguinal and axillary glands are found to be enlarged, hemorrhagic, and frequently soft in the center. Cover-glass preparations made from these glands show organisms identical with those above described. The same organism is abundant in the blood. The spleen is enlarged, soft, and oftentimes hemorrhagic. Hemorrhages are found in the lungs, stomach, intestines, liver, and kidneys. All of these organs are congested. Cultures from these organs show the original organism.

Monkeys inoculated with this organism die in from seventy-two to one hundred hours. The autopsy reveals the same lesions as seen in the rats and the organism can be recovered from any of the organs. Later a detailed report will be made.

Very respectfully, your obedient servant,

W. J. Calvert,
*First Lieutenant and Assistant Surgeon, U. S. A.*

The President of the Board of Health,
*Manila, P. I.*

Lieut. W. J. Calvert, assistant surgeon, United States Army, on duty with the board of health of Manila, was sent on a special visit to certain cities in Japan and to Hongkong, China, with a view to learning the measures in use for dealing with the infection of bubonic plague. His report, dated May 24, 1900, is as follows:

I proceeded to Japan, per paragraph 7, Special Orders, 48, via United States Army transport *Sheridan*, which left Manila March 6, 1900. On arriving at Nagasaki, I proceeded by first available steamer to Yokohama and from there to Tokyo by rail. On my way back to Manila I visited Kyoto, Osaka, Kobe, and Hongkong.

On returning from his studies in Germany Dr. Kitasato established, in Toyko, a hospital for infectious and contagious diseases; a well-equipped laboratory with a library pertaining to this department of medicine, and a farm and laboratories for the preparation of antitoxins. Later the Japanese Government, recognizing the importance of this work, made it a Government institution under the supervision of Dr. Kitasato.

The hospital is of Japanese architecture and comprises all of the modern sanitary improvements, a large steam sterilizing apparatus, and a well-equipped studio for photography and microphotography. The laboratory is a large two-story frame building, in which the routine laboratory work of the hospital is carried on, and original investigations in bacteriology, pathology, and general treatment of these diseases pursued. Special investigations on the pathology and serum treatment of tuberculosis, dysentery, typhoid fever, and plague are now in progress. Dr. Kitasato's staff comprises a number of well-trained doctors. In addition, the chief officer of health of Tokyo and the chief quarantine officer of Yokohama are pursuing in this laboratory original investigations in connection with their departments. In difficult or doubtful cases these officers make the necessary examinations, leaving the ordinary routine work to their assistants. The serum farm is located in the outskirts of Tokyo. The equipment here consists of a small laboratory, stables, apparatus for handling animals, and a large lot in which the animals are allowed exercise. The serum laboratory is located in Tokyo, and is equipped with power centrifugalizers and concentrating and boiling apparatus.

A brief description of the preparation of plague antitoxin will be given. Large quantities of sterile cultures of the plague bacilli are repeatedly injected into the horse at intervals of two weeks. After from eight to twelve inoculations a small quantity of serum is prepared for experimentally testing its strength. When larger quantities of serum are desired, from 2,000 to 2,500 c. c. of blood are withdrawn from the jugular vein. The blood is then whipped, centrifugalized, and the clear serum drawn off and made a one-half per cent solution of carbolic acid. It is then ready for use. Three days after blood is withdrawn from an animal, another inoculation is made, and two weeks later blood may be again withdrawn. This cycle may be repeated as often as desired.

Thus far serum has been prepared which has a protective power, but at present is not successfully used for therapeutic purposes. It is claimed by some that when used in very large quantities, the serum reduces to some extent the mortality. Serum mixed with equal parts of sterile cultures is sometimes used to protect exposed persons. From 0.6 to 0.8 c. c. of this mixture is used for the first injection. The serum is supposed to give immediate protection while the toxin in the sterile culture is being converted into antitoxin. After the reaction has subsided from 0.8 to 1 c. c. of sterile culture is used for the second injection. Thus far plague antitoxin sufficiently strong for therapeutic use has not been made or is not generally known.

At the present time there is no plague in Japan. Suspicious cases of plague occurring on the island are immediately reported to the Institute for Infectious Diseases. If necessary Dr. Kitasato or some member of his staff visits the infected district to give any possible assistance. Patients dying of plague are buried in a separate cemetery. The cadaver is well covered with chloride of lime.

The Japanase propose to pursue the following methods in the event of another epidemic in Japan:

Situated as Japan is, sea quarantine is the only method of preventing the introduction of plague. At present their quarantine laws are most stringent and well carried out. In the event of an epidemic a strict land quarantine would be established, when all trains, etc., leaving an infected district would be inspected. If a suspected case of plague should be found, the patient and all passengers in the infected wagon would be isolated and the wagon and effects of the passengers disinfected.

The entire infected district would be quickly and thoroughly cleaned. This cleaning process would be quickly extended to surrounding and distant districts, so that in a short period of time the entire island would be in as good sanitary condition as possible. While the cleaning is in progress an attempt would be made to kill all the rats. A stated price is given for each rat brought to a designated officer.

A systematic search is made for the sick and all cases of plague or suspected plague immediately reported. The patients, their families, and immediate neighbors are immediately isolated and their houses and effects disinfected. In this way those exposed to the disease are easily watched and are allowed to return to their homes after a period sufficiently long (ten days) to insure the nondevelopment of the disease. An attempt is made to teach the general public the nature of plague, its modes of spreading, and the individual precautions to be taken. This information is given through the public press, schools, and places of worship.

Protective inoculation will probably be extensively used, more especially on those exposed to the disease. The protective power develops after from eight to ten days, and if developed from toxins is of long duration (not definitely determined). The immediate family of the patient will probably be inoculated with the mixture of serum and toxin.

The treatment of the patient will be the early extirpation of the bubo, injection of large quantities of serum, treatment of symptoms as they arise, with especial reference to the heart. A well-selected diet will be given. Extreme care of the hospital must be taken, especially with respect to illumination, ventilation, and contamination.

Plague is practically always present in Hongkong. A corps of inspectors make a house to house inspection and all cases or suspected cases of plague or other contagious or infectious diseases are immediately sent to Kennedytown Hospital. Systematic disinfection is employed in the plague-infected districts and in houses in which isolated cases of plague are found.

All cadavers found in the streets or unclaimed are sent by the police or inspectors to the mortuary, where the necessary examination and the proper disposition of the bodies are made. All plague cadavers are buried in the plague cemetery, which is on the slope beyond Kennedytown Hospital. The bodies are well covered with chloride of lime.

The mortuary is in an isolated spot on the slope near the outskirts of the city. It consists of several small brick buildings, well drained and equipped for complete post-mortem examinations.

The Kennedytown Hospital is a large substantial building situated in the extreme outskirts of the city and used for infectious and contagious diseases. Around the main building are a number of nipa wards in which plague patients are treated. The floors of these wards are built about 2 feet above a concrete pavement, enabling almost perfect cleanliness to be maintained.

In conclusion, I wish to thank Dr. Kitasato and his assistants for their courtesies so generally extended to me while in Tokyo.

## MUMPS.

Of this disease there were reported in 1898 2,075 cases in the Army, regulars and volunteers, equivalent to an admission rate of 14.04 per thousand of strength. The largest rate, 48.54, was given by volunteers in the Philippine Islands. In 1899 the Army rate, volunteers and regulars, was 17.42, the largest rate being again in the Philippines, where 22.94 per thousand was recorded. No fatality occurred among these cases.

As the average annual rate for the decade 1888–1897 was only 5.63 per thousand, the increase to 14.04 in 1898 and 17.42 in 1899 shows the influence of aggregation in large camps and garrisons on the prevalence of the disease.

## DIPHTHERIA.

In the Army, regulars and volunteers, 59 cases of diphtheria, with 4 deaths, were reported in 1898, and 58 cases, with 5 deaths, in 1899. The colored troops were comparatively free from this affection. No special report was rendered on this disease during the past year.

## ERYSIPELAS.

A noticeable decline has taken place in the prevalence of erysipelas in our Army of late years, which may be ascribed to the progress of aseptic surgery. During the decade 1888–1897 the average annual rate of admission for erysipelas was 1.94 per thousand of strength, a rate which was reduced in 1898 to 0.64, and in 1899 to 0.84. In 1898 there were 94 cases, with 1 death; and in 1899 92 cases, with 4 deaths.

## TYPHOID FEVER.

On August 18, 1898, a board of medical officers consisting of Maj. Walter Reed, surgeon, United States Army; Maj. Victor C. Vaughan, division surgeon, United States Volunteers, and Maj. Edward O. Shakespeare, brigade surgeon, United States Volunteers, was appointed to investigate into the causes of the extensive prevalence of typhoid fever in the various camps in the United States, to call the attention of the proper commanding officers to any insanitary conditions in the camps visited, and to make recommendations with a view to their prompt correction. The report of this board has lately been received and is now on file in the library of the Surgeon-General's Office, where it may be consulted by those desiring to see the original data on which the conclusions of the board are based. An abstract of the report has already been published. In expressing my high appreciation of the able and painstaking manner in which the board accomplished the task imposed upon it, I desire to express my sincere regret at the death of Major Shakespeare, which occurred shortly after he had completed his arduous labors as a member of this board.

The subject of typhoid fever in our military camps was discussed also at some length in my last annual report. It will suffice, therefore, at the present time for me to present the statistics of the Army for 1899, together with the completed statistics, including the volunteer records, for the year 1898.

In 1898 there were reported 20,926 cases, with 2,192 deaths and 44 discharges on account of disability consequent on the disease. These numbers represent an admission rate of 141.59, a death rate of 14.83, and a discharge rate of 0.30 per thousand of the mean strength. The deaths constituted 10.48 per cent of the cases, equivalent to 1 death in 9.55 cases.

The relative prevalence and mortality were greatest among the troops in Porto Rico, where the admission rate was 294.74 and the death rate 34.60 per thousand of the strength. Among these troops there were 1,678 cases, of which 197 proved fatal, the deaths constituting 11.74 per cent of the cases, or 1 death in 8.52 cases. The largest absolute number of cases was reported from the camps in the United States, 17,686 cases, of which 1,749 proved fatal, the admission rate being 143.48 and the death rate 14.19 per thousand of the mean strength. The fatal cases constituted 9.89 per cent of the total, equivalent to 1 death in 10.11 cases.

In the Army, regulars and volunteers, in 1899, 2,184 cases of typhoid fever were reported, with 258 deaths and 24 discharges on account of disability caused by the disease. These numbers are equivalent to the ratios of 20.69 admissions, 2.44 deaths, and 0.23 discharges per thousand of the mean strength. The deaths constituted 11.81 per cent of the cases, equivalent to 1 death in 8.47 cases. The rates were lowest among troops serving in the United States and highest among those in garrison in Cuba. The admission and death rates among the former were 10.85 and 1.07 per thousand of strength, and among the latter 39.40 and 4.24.

In 1898 the difference in the susceptibility of volunteers and regulars was strongly marked, the admission rate of the former having been nearly double that of the latter, 166.03, as compared with 88.56 per thousand of strength. The explanation of this lies in the fact that most of the regulars were seasoned soldiers capable of taking care of themselves under exposures and of avoiding, under the supervision of experienced officers, many of the insanitary conditions which propagated the disease among the volunteer commands. The volunteers reported 16,796 cases, with 1,738 deaths, showing a fatality of 1 case in 9.66, or a percentage of 10.35 fatal cases. The cases among the regular troops were of a similar character as to gravity, for 1 death occurred in every 9.10 cases, or 10.99 deaths in every hundred cases. The death rate per thousand of strength was only 9.74, as compared with the death rate of the volunteers 17.18, owing to the much larger number of men affected per thousand of the volunteer strength.

In 1899 the typhoid-fever rates of both regulars and volunteers became materially lowered. Among the former 1,481 cases with 180 deaths were reported, equivalent to the respective rates of 22.98 and 2.79 per thousand of strength. The fatal cases constituted 12.15 per cent of the total number of cases, equivalent to 1 death in 8.23 cases. Among the latter 703 cases with 78 deaths were reported, equivalent to the respective rates of 17.10 and 1.90 per thousand of strength. The fatal cases constituted 11.10 per cent of the total number of cases, equivalent to one death in 9.01 cases. This somewhat greater prevalence of typhoid fever among the regulars is explained by the recruitment of these troops to 65,000 men and the prompt shipment of these recruits to join their regiments, most of which were on active foreign service, while the United States Volunteer regiments which were raised later in the year, passed a considerable time in well-constructed and equipped camps of organization before embarking for service in the

Philippines. The relative freedom of both regulars and volunteers during this year, as compared with 1898, must be ascribed to the care exercised in securing purity of water supply, removal of excreta, and thorough cleanliness of the camps and their surroundings.

According to the records, the colored troops were much less liable to become affected with typhoid fever than the white troops, but when attacked the colored men succumbed more readily to the disease. The following tabulation compares the admission and death rates per thousand of strength of the two races during the years 1898 and 1899:

| Year. | White. | | Colored. | |
|---|---|---|---|---|
| | Admission rate. | Death rate. | Admission rate. | Death rate. |
| 1898 | 147.58 | 15.26 | 27.97 | 6.70 |
| 1899 | 21.77 | 2.52 | 5.36 | 1.30 |

In 1898 the fatal cases constituted 24.15 and in 1899 24.32 per cent of the total cases among the colored men, while the respective percentages among the white troops were only 10.34 and 11.60.

Since the close of the calendar year 1899 two outbreaks of typhoid fever have been reported. The first occurred in March, 1900, among troops stationed at Paete, Laguna Province, Luzon. Two companies of the Forty-second Infantry were stationed at this place, a town of 2,000 inhabitants, situated half a mile from the shore of the lake on a gently sloping bench backed by abrupt hills rising to a height of 1,500 feet. Sixteen patients with diagnosis of malarial fever, diarrhea, and dysentery were sent from this garrison to the division hospital at Calamba. Maj. George H. Penrose, surgeon, United States Volunteers, in charge of the hospital, suspected the presence of typhoid infection in these cases, and Lieut. R. P. Strong, assistant surgeon, United States Army, was sent from Manila to investigate and report. Of the 16 cases, 13 gave a positive reaction by the Widal test. The division surgeon, Maj. H. S. T. Harris, surgeon, United States Volunteers, inspected the sanitary conditions and found the garrison using water from springs in the vicinity of the houses occupied as quarters. These springs were merely the seepage from the branches of a stream which flowed through the town and received all sewage and surface filth. When the town was first occupied the commanding officer, on the recommendation of the surgeon, issued an order prohibiting the use of the water of this stream below a certain point in its course, but this order was said to have been disregarded repeatedly, especially by the members of Company H, Forty-second Infantry, from which came 11 of the 13 cases of undoubted typhoid transferred to the Calamba hospital. By direction of the chief surgeon, Major Harris took with him to Paete two Waterhouse-Forbes sterilizers and orders were issued that no other than sterilized water should be used for cooking or drinking. Four more cases occurred before the epidemic was suppressed.

The second outbreak, in which 54 cases were reported, occurred in the Twenty-sixth Infantry Volunteers, after the arrival of the regiment in the Department of the Visayas and its distribution at various stations on the island of Panay. This command, it is understood, brought the disease from the United States, but the chief surgeon considers it likely that some of the cases may have originated in the department, as typhoid fever is common among the natives, and a few sporadic cases appeared in detachments of troops which had not been associated with this particular regiment. The cases were sent for treatment to the hospital at Iloilo, and the measures taken to suppress the spread of the infection appear to have been successful.

Concerning the medical history of this regiment the surgeon, Maj. Charles F. Mason, United States Volunteers, reported, under date June 30, 1900, from Jaro, Panay, P. I.:

> The regiment was organized at Plattsburg Barracks, N. Y. The first recruits arrived July 15, 1899, the organization of the regiment being complete August 12, 1899. All recruits were reexamined by the regimental medical officers as soon as they joined, a total of 1,597 men being thus reexamined, of whom 197 were discharged as not coming up to the high physical standard required. The troops were quartered in the fine new barracks of the post, and, although somewhat overcrowded, were under good sanitary conditions; nevertheless typhoid fever developed, and the regiment has never been quite free from it since. The first case occurred August 17, 1899, and, like the others developed at that post, is believed to have been due to an infected water supply, that of the post being the same as that of the town of Plattsburg, where there were a number of cases in families using the city water. Even the thirty days' trip across the ocean did not get rid of the infection, 4 cases having developed on the steamer. Up to date there have been 49 cases, with 7 deaths and 6 cases remaining in hospital. In this connection it should be mentioned that typhoid fever, according to the native physicians, is endemic in this island.
>
> The regiment left Plattsburg Barracks September 5, 1899, and reached San Francisco September 17, going out to the model camp for eight days, and sailing for the Philippines September 25, arrived at Manila October 24 and at Iloilo, where it first disembarked, October 27, 1899.

*Second attacks.*—In eight of the reported cases of typhoid fever the patients, according to the records, suffered from a second attack. In one of these, however—that of J. G., Fifteenth Minnesota—the soldier was on sick report for so short a time during the first attack that this alone throws doubt on the diagnosis. In two—the cases of F. C., First Nebraska, and C. B., Thirty-fifth Michigan—the interval between the attacks was so slight that they may be regarded as cases of recrudescence rather than cases of a recurrence of the disease in the form of a second attack. Singularly enough, in the five other cases reported the patients belonged to the same regiment—the Forty-ninth Iowa—and each had his first attack at Jacksonville, Fla., and his second during the local outbreak of typhoid in that regiment while in camp near Havana, Cuba. This naturally suggests a doubt as to the specific enteric character of the first attack.

The following is a brief abstract of the eight cases as carded from the monthly reports of the various organizations and hospitals. It is to be understood that the diagnosis on each of these reports is typhoid fever:

I. J. G., Company F, Fifteenth Minnesota, was taken on sick report at Camp Ramsey, Minn., August 26, 1898; to duty September 8.

He was again taken on the regimental sick report November 30, and sent to the First Division hospital, Second Army Corps, Camp Mackenzie, Ga., on December 7, whence he was furloughed on January 27, 1899.

II. F. C., Company C, First Nebraska, was taken into regimental hospital July 3, 1898; transferred to the reserve hospital at Cavite, P. I., July 20; returned to duty August 17.

He was again taken on sick report September 20 and transferred to the transport *Rio de Janeiro*, which brought him to the field hospital of the Provisional Division of the Eighth Army Corps at the Presidio of San Francisco, Cal., from which he was returned to duty on November 11, 1898.

III. C. B., Company E, Thirty-fifth Michigan, was taken into regimental hospital October 16, 1898; sent to the First Division hospital, Second Army Corps, Camp

Meade, Pa., October 22, and to civil hospital, Pottsville, Pa., October 23, whence he was returned to duty November 27.

On December 6, 1898, he was again received into regimental hospital, and on the 28th was sent to the First Division hospital, Second Army Corps at Camp Mackenzie, Ga., whence he was returned to duty March 22, 1899.

IV. J. A., Company K, Forty-ninth Iowa, was taken on regimental sick report August 20, 1898, and sent to the Second Division hospital, Seventh Army Corps, Jacksonville, Fla., on the same day, from which he was returned to duty September 22.

He was again taken on the regimental report February 17, 1899, and was transferred March 5 to the Second Division hospital, Seventh Army Corps, Havana, Cuba, where he died March 18.

V. N. F., Company A, Forty-ninth Iowa, was taken on regimental sick report August 22, 1898, and on the same day was transferred to the Second Division hospital, Seventh Army Corps, Jacksonville, Fla., from which he was returned to duty on September 8.

His name again appears on the regimental report as taken sick March 29, 1899, and transferred to the Second Division hospital, Seventh Army Corps, Havana, Cuba, April 1, where he was mustered out July 7, 1899.

VI. W. E., Company D, Forty-ninth Iowa, was received into regimental hospital September 3, 1898, and transferred to the Second Division hospital, Seventh Army Corps, Jacksonville, Fla., September 8, whence he was furloughed October 11.

He was again taken on regimental report March 2, 1899; was transferred to the Second Division hospital, Seventh Army Corps, Havana, Cuba, March 9, from which he was shipped April 6 on the hospital steamer *Missouri* and received into the Josiah Simpson general hospital, Fort Monroe, Va., April 13. He was returned to duty May 3.

VII. P. B., Company B, Forty-ninth Iowa. In regimental hospital September 29, 1898; to Second Division hospital, Seventh Army Corps, Jacksonville, Fla., October 4; to the general hospital, Fort Myer, Va., October 21; returned to duty November 25.

Taken again into regimental hospital, Cuba, March 14, 1899; transferred to the Second Division hospital, Seventh Army Corps, Havana, Cuba, March 15; placed on the hospital steamer *Missouri* April 5; received into the Josiah Simpson general hospital, Fort Monroe, Va, April 13, where he was mustered out May 17.

VIII. S. M., Company F, Forty-ninth Iowa. In regimental hospital October 5, 1898; to Second Division hospital, Seventh Army Corps, Jacksonville, Fla., October 11; to the general hospital, Fort Myer, Va., October 21; returned to duty November 25.

Again on the regimental sick list March 15, 1899; to the hospital steamer *Missouri*, Cuba, April 5; to the Josiah Simpson general hospital, Fort Monroe, Va., April 13; returned to duty May 3.

### MALTA FEVER.

In my last annual report, page 286, attention was called to a case of Malta fever, reported July 14, 1899, by Lieut. Walter Cox, assistant surgeon, United States Army, San Juan, P. R. Since then 2 cases were reported by Lieut. W. P. Chamberlain, assistant surgeon, United States Army, while on duty on the hospital ship *Relief* at Manila, P. I. These two men lay on adjacent beds for several weeks. The temperature was neither markedly remittent nor conspicuously undulating, and the original opinion of an irregular form of malaria might have been retained, notwithstanding the failure of the therapeutic test, but for the application of the serum reaction at the laboratory of the First Reserve hospital. Both cases were mild, and suggest little of therapeutic value other than the futility of using quinine in this disease. The study of such cases may throw some light on the etiology of obscure tropical fevers of mild symptomatology, which do not behave like typhoid and do not yield to quinine or show plasmodia in the blood.

In a communication dated January 2, 1900, Acting Asst. Surg. J. J. Curry, assistant pathologist at the First Reserve hospital, called attention to the probable existence of many cases of Malta fever among the troops in the Philippines. He stated that—

> 1. Some time ago Dr. Strong, the pathologist, performed an autopsy on a man who had died after a continued fever of long duration. Post-mortem examination was negative as to typhoid and to malarial fever. From the cultures of this case was obtained an organism identical with the coccus melitensis (the causative agent of Malta fever). This organism was inoculated into monkeys and produced the typical symptoms of Malta fever. Autopsy on the animals inoculated showed typical lesions, with the development of the same coccus, which in turn produced the same disease in other animals. Dr. Strong in some manner inoculated himself during these investigations, and has now Malta fever.
>
> 2. At a post-mortem examination on a case received from the Second Reserve hospital December 27, 1899, a similar condition was met with as in Dr. Strong's case—i. e., no typhoid, malaria, or other recognized pathological condition. Cultures from this case showed the coccus melitensis.
>
> 3. A case of continued fever in the officer's ward of the hospital, whose blood was negative repeatedly to malaria and typhoid, gave the reaction with the melitensis.
>
> 4. A case on the hospital ship *Relief*, whose blood gave negative results as above, also reacted with the melitensis.
>
> As the result of the investigations of Dr. Strong, showing the first case to be one of undoubted Malta fever, the second case being also one of undoubted Malta fever, and the positive results of the blood serum reaction of the third and fourth cases, we have evidence that Malta fever prevails here to a considerable extent. It is probable that many of those cases of continued fever which fail to react to Widal's test for typhoid, and which are negative to malaria, are cases of Malta fever. There are a number of such cases in the hospital at the present time, and no doubt the same is true of the other hospitals.
>
> I will start at once the blood examination for Malta fever on all such cases in the hospital. This will mean considerable strain on the laboratory department, which, at the present time, owing to Dr. Strong's illness, is behind in its work. I would, therefore, respectfully suggest that a medical officer with some experience in laboratory work be detailed to assist.

### YELLOW FEVER.

During the year 1898 1,169 cases were reported, of which 144 proved fatal, a percentage of 12.32, or 1 death in 8.12 cases. (Six cases, 1 fatal, occurred in the Signal Corps, the strength of which could not be distributed by localities for want of the necessary data.) Two cases, neither fatal, occurred in Porto Rico; 33 with 4 deaths, in the United States, and the remaining cases in the island of Cuba. The cases constituted 7.91 per thousand of the strength of the Army, and the deaths 0.97 per thousand.

During this year there were reported in Cuba 896 cases and 103 deaths among the white troops, equal to the respective rates of 132.58 and 15.24 per thousand of the strength in Cuba, and among the colored troops 232 cases and 36 deaths, equal to the respective rates of 146.19 and 22.68 per thousand men. The larger rates of the colored troops have already been explained on page 591. The fatal cases among these troops constituted 15.52 per cent of their total number of cases, or 1 death in 6.44 cases, while among the white troops the fatal cases formed only 11.50 per cent of the total number stricken, or 1 death in 6.90 cases.

During the year 1899 there occurred among our troops, regulars and volunteers, 262 cases of yellow fever with 55 deaths, the fatal cases constituting 20.99 per cent of the total number, equivalent to 1 death in 4.76 cases. (One fatal case occurred in the Signal Corps.) Fourteen of the cases, with 3 deaths, were reported from the United States, the others from Cuba. The cases constituted 2.48 per thousand of the strength of the Army, and the deaths 0.52 per thousand.

During this year there were in Cuba 239 cases with 50 deaths among over 18,000 white troops, and only 8 cases with 1 death among over 2,000 colored troops. The admission rates were for the whites 13.26 and for the colored 3.95, while the death rates were for the whites 2.77 and for the colored only 0.49 per thousand of men.

In addition to the outbreaks of yellow fever mentioned under the heading, "Division of Cuba," supra page 678, this disease appeared during the year at Key West, Fla. Rumors of the existence of yellow fever among the citizens of Key West were current in the barracks during the month of August, but these were declared by the health officer to be erroneous until August 31, when he announced officially the existence of 4 unmistakable cases. The post was immediately placed in strict isolation, and arrangements were made for the transfer of the garrison to Fort Terry, Plum Island, near New London, Conn. Embarkation was effected and the troops, 195 officers and men, sailed on the *San Marcos*, of the Mallory line, on September 6. They arrived on the 11th at the New York quarantine, where their baggage was disinfected, and on the 13th they were transferred on the steamer *Meigs* to their new station. Much credit is given to Acting Asst. Surg. R. C. Eve for his earnest work and successful management at this time. Two weeks after the removal from Key West Barracks yellow fever appeared in the detachment of 1 officer and 23 men which had been left behind, and 12 cases, 1 of which proved fatal, were reported from this command.

Several instances of the occurrence of yellow fever on transports were recorded during the year, but in none of these was there any spread of the disease. Thus on the transport *Ingalls*, at Havana, Cuba, a case was discovered at sick call, September 4, 1899, in the person of an electrician. The patient was removed to Las Animas hospital, where he died five days later. On the morning of September 9 symptoms of the disease were developed in a fireman, who also was sent to hospital, where he recovered at the end of five days. The disease in both cases was evidently derived from Havana. The ship was carefully disinfected and no other case occurred.

A case was discovered on the transport *Burnside* on the evening of the day of sailing from Havana, Cuba, November 24, 1899.

Early in November 2 cases were found on the transport *Wright* at Santiago, Cuba. They were immediately transferred to hospital on shore. The ship was disinfected and held in quarantine for five days, after which she proceeded on her voyage.

The transport *McClellan* sailed from Santiago, Cuba, December 23, 1899, and arrived at Brooklyn, N. Y., on the 29th. Immediately after sailing, a sailor, who had been for a week ashore in the city of Santiago, was taken sick with an unmistakable attack of yellow fever. He was placed in absolute isolation, with a special nurse. The visits of the surgeon were made in pajamas and rubber gloves, which were left inside of the outer door of the sick room, and were afterwards soaked in bichloride solution. The patient died on the 27th. The body was removed in sheets soaked in bichloride solution, and was buried at sea. Bed linen and blankets were soaked in a similar solution, and the ward was washed with a strength of 1:500, and afterwards fumigated with sulphur. On arrival at the New York quarantine station the bedding of the hospital and of the hospital corps quarters was disinfected, and the ship again treated with bichloride and fumigation. No other case occurred.

## ON THE TREATMENT OF YELLOW FEVER, BY ACTING ASST. SURG. BAT SMITH, YELLOW FEVER HOSPITAL, SANTIAGO BAY, CUBA, SEPTEMBER 19, 1899.

Owing to some controversies which have occurred of late relative to the treatment of yellow fever during this epidemic, I deem it my duty to submit to the chief surgeon my personal views on the subject, as the great majority of the patients treated at this hospital were under my sole care.

A treatment inaugurated by Acting Asst. Surg. E. F. Nunez,[1] and which I said in a former communication deserves due consideration, has found favor with some of the medical officers of this department. The main feature in this treatment seems to be the doctor's great reliance upon and faith in the therapeutical value of salol, with occasional doses of cream of tartar water acidulated with a little lime juice; also irrigation of the bowels with warm water. Lemonade, hot or cold, is also given according to the necessities of the case. Dr. Nunez argues that salol acts as an antiseptic, rendering the stools absolutely odorless. He further argues that by reason of its antiseptic properties it calms the irritation of the stomach and bowels, and thereby reduces the temperature. Cream of tartar acts upon the kidneys and keeps the bowels open.

I watched the results of this treatment with keen interest, sincerely trusting that the doctor's sanguine expectations would be realized, yet I had serious misgivings on account of the nature and composition of the drug salol.

The fact seems to have been overlooked that salol is an irritant to the mucous membranes. It is not soluble in water, and but very slightly soluble in the stomach, but is decomposed by the pancreatic juice into salicylic acid and carbolic acid, the drug being a composition of salicylic acid 60, carbolic acid 40, the antiseptic virtues of the compound being, in all probability, due more to the latter than to the former ingredient. The drug when used in moderate doses evidently has a beneficial effect in soothing the pain in the bowels, which is present in the great majority of cases. The beneficial results obtained by these moderate doses are, on the other hand, more than counterbalanced by the poisonous action of the drug when given so persistently, and in such doses as were administered to the patients during this epidemic regardless of the fact that poisoning by carbolic acid would certainly occur, owing to the decomposition of the drug by the pancreatic juice into its two original ingredients.

According to the best of the European as well as American investigators, the drug is contraindicated in renal inflammation. Especially in the acute form, Lepine and Dujardin Beaumetz condemn the administration of the salicylates in any form when albumen is present. Hesselbach maintains that salol is prone to affect the secreting structure of the kidneys, and deems it exceedingly dangerous when the kidney is diseased. He reports in the Lancet two fatal cases from the use of salol.

If salol be given in doses sufficient to reduce the temperature its poisonous effects are plainly manifest, such as intense headache, restlessness, a profuse and exhausting sweat, delirium; in some cases the mental disturbance lasts for several days, the albumen in the urine increases, and the urine assumes a dark olive-green color. These symptoms were well marked in several cases at this hospital, and two patients had strong and frequent epileptiform convulsions. Again salol has a depressing influence on the circulation, and in yellow fever capillary stagnation is a well-marked feature; while the direct depression of the heart itself decreases the force of the circulation. In this latter view of the action of salol, I am sustained by Kolbe, Danewsky, and Hesselbach. After salol has been administered for any length of time the urine becomes of a dark reddish-brown color, and when nitric acid is added to it the albumen changes to a yellowish-green color; this I have seen mistaken for bile, when in fact it was due to the union of carbolic acid and nitric acid, forming picric acid (bile absent in yellow fever). Salol given in decided doses, whether in yellow fever or any other disease where the kidneys are the seat of an inflammatory process, is prone to bring about renal hemorrhages, and sometimes hemorrhagic cystitis. Considering the decomposition of the drug into its two original ingredients, salicylic and carbolic acids, and the poisonous properties of the two acids, either alone or together, their pernicious action in irritating an already inflamed kidney, bringing about total suppression of urine, the most fatal of all the symptoms in yellow fever, would certainly lead me to believe the drug to be contraindicated in this disease.

Some cases of yellow fever recovered under the salol treatment. They were, however, of a mild type, and would in all probability have passed through the ordeal with little medication, the disease being a self-limited fever. The records of this hospital show that the treatment of severe cases with salol was anything but satisfactory. In this statement I am fully sustained by the commanding officer, Acting Asst. Surg. G. A. McHenry, and by the nurses who administered the medicine.

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[1] See Annual Report of the Surgeon General of the Army, June 30, 1899, p. 264.

When put in charge of the wards of this hospital, on June 16, 1899, the commanding officer asked me if I had any particular treatment marked out. I outlined to him, as nearly as possible, my line of treatment; he expressed himself as satisfied, saying that it was identical with that of his friend Surgeon Murray, of the Marine-Hospital Service, whose long experience with the disease certainly entitles his opinion to consideration. The treatment in the majority of cases was as follows: If the patient's condition was such as to permit it, I usually gave him calomel combined with soda, a hot mustard footbath, and a warm sponge bath from head to foot, also an irrigation of the bowels with warm water, after which the patient was covered up in bed, but not too heavily; sometimes a warm lemonade was given to promote the perspiration. If the temperature is high half an hour after giving the calomel and soda, I give the patient about ten grains of phenacetine combined with citrate of caffeine, to be repeated according to the necessities of the case. Phenacetine is a coal-tar product, produced by the action of glacial acetic acid on paraphenetidin, a body obtained from phenol. Experiments go to prove that the fall of the temperature produced by phenacetine is due to a lessened production of animal heat caused by a direct influence of the drug upon the thermogenetic centers, not necessarily accompanied by any distinct alteration of the circulation. By stimulating the heart (when full therapeutical doses are given) and the vasomotor system, the arterial pressure is increased, and the capillary stagnation, which is so pronounced in yellow fever, is partially overcome. Owing to its analgesic properties, phenacetine is a very useful remedy in relieving the intense frontal headache. Its antipyretic effect or rather action is more gradual, more prolonged, and less apt to be attended with disagreeable symptoms than any drug of its class. It does not irritate the stomach and is the safest and most efficient of the coal-tar derivatives. Lepine and Guttman place it at the head of the list. By combining phenacetine with caffeine citrate, phenacetine is placed in the citric-acid group, which renders it less poisonous still.

The combination is made because caffeine stimulates the brain, giving an increase to the urinary secretion and force to the pulse, and elevates the arterial pressure. It is a cardiac stimulant and prevents heart failure; it takes the place of digitalis, which can not be used in yellow fever. It never disagrees with the stomach and acts with promptness; by reason of its action upon the kidneys it in a great measure guards against suppression of urine. There is no danger of the patient's being poisoned by carbolic acid, however large the dose of phenacetine may be, as it contains no phenol, and whatever depressing influence the drug may have is more than counterbalanced by the stimulating properties of the caffeine citrate.

I have always caused the patients to be sponged off at least twice a day with hot water, and the bowels to be irrigated with warm water morning and evening. This relieves the pain and uneasy feeling in the bowels, permitting the patient to rest more easily. Should symptoms of uremic poisoning set in, or the urine become scant, I order a hot bath at once, immersing the patient up to his neck in the water (this year I used half sea and half fresh water) allowing him to remain in the bath for about fifteen minutes, after which he is taken out and wrapped in dry blankets and one-half teacupful of green coffee tea and one ounce of gin is given. This has the effect of causing a profuse perspiration, and in many cases a copious flow of urine was obtained, even after the action of the kidneys had been suppressed. The green coffee tea was suggested to me by acting Asst. Surg. G. A. McHenry, who states that the remedy is extensively used on the Gulf coast, being a favorite one of Surgeon Murray's. As to drinks, some stomachs bear cold drinks well; in other cases, however, warm drinks are more suitable. Under no circumstances, however, should the stomach be overburdened with liquids, hot or cold; whatever is given to the patient should be given in moderate quantities. As to nourishment, if the patient can possibly hold out I give none at all, but if obliged to do so rice water has always been my favorite. Milk will not do, as it is apt to curdle on the stomach and do more harm than good. Many native physicians (Cubans) overburden the stomach with sweet milk; the result is at times an uncontrollable vomiting.

Black vomit I have always (when at all) controlled more easily with the subnitrate of bismuth than with any other remedy at my command, the only difficulty being that the doses generally used are not large enough. In administering this drug to check black vomit, or when it is threatened, not less than one and a-half drachms should be given at a dose, repeated if necessary according to the judgment of the attending physician.

In the stage of convalescence the usual remedies, such as the bitter tonics, wines, etc., may be used. I have always found that milk punches, eggnogs, etc., are of great benefit after the fall of the fever. The fever is a very exhausting one and the patient's vitality is much impaired. Alcohol is a negative article of food, insomuch as it prevents oxidation, and if it does not increase the patient's strength, at least it prevents waste.

*Remarks on the above by Acting Asst. Surg. Edward F. Nunez.*—Acting Asst. Surg. Bat Smith is fully aware that my report on the treatment of yellow fever by salol and bitartrate of potassium and my conclusions drawn from same have been abundantly proven by clinical experience.

The combination of the cream of tartar and lime juice with the salol prevents the irritating action of the latter drug on the intestinal canal and the kindeys, and consequently does away with the contraindications that the doctor sustains. It is possible that salol acts in this disease by neutralizing the specific toxine produced by its micro-organism, and thereby counteracting its pathogenic influence on the general system, or else in some unknown way we can not yet explain any more than we can say how mercury brings about the cure of syphilis.

I can assure Dr. Smith that salol has never given rise to intoxication or even any disagreeable after effects in my hands. Is he sure that the convulsions he witnessed in his two cases were not due to uremic poisoning?

The presence of bile in yellow fever is admitted by every ancient and modern writer on this disease, as it can generally be found in all the secretions. To it, as well as to some oxidation product of the coloring matter of the blood, is due the jaundice that characterizes this affection. It is only absent in an advanced stage where the fatty changes have completely obliterated the hepatic cells. Nitric acid will readily detect the presence of bile in the urine by imparting to it a green color.

I can not understand why the doctor criticises the Cuban physicians on the administration of milk during the second stage of yellow fever, since it is almost universally considered as the most eligible article of food in this particular disease, not only on account of its nutritious properties, but also by virtue of its diuretic and soothing effects on the kidneys. I never knew that any Cuban colleague ever recommended sweetened milk in this disease as he asserts. They generally give it mixed with a certain proportion of vichy or Apollinaris water, or diluted one-third or one-half with sterilized water in order to prevent heavy curdling.

*Remarks by Maj. W. C. Gorgas, acting chief surgeon, Division of Cuba.*—As a member of the yellow-fever commission for the Department of Havana, I have had to see nearly every case of yellow fever that has occurred in this department since January 1, 1899, and in this way have seen the treatment of every physician who has treated yellow fever here this year.

I have seen the phenacetine and caffeine treatment referred to used excessively by one physician. He got no better results than others, and as a consequence I look upon this course with disfavor.

I do not believe that any particular medicine should be urged for any particular symptom.

The tendency of most American physicians and many of the Cubans is toward constant dosing, which I am convinced does a great deal of harm.

From a very extensive experience in the observation of the practice of the best element of the native physicians, I am convinced that the best results are obtained by not using drugs to any great extent for combating the various symptoms.

I do not believe that either of the courses referred to in this paper are the best to be adopted in this disease, and would personally look upon them as being hurtful.

## CEREBRO-SPINAL MENINGITIS.

It is doubtful whether all the cases of cerebro-spinal meningitis which occurred in the Army were recorded as such. In 1898, when typhoid fever was epidemic in so many of the camps, some cases of cerebro-spinal meningitis, unless strongly marked in their clinical characteristics, would probably have been recorded as cases of the prevailing disease. During this year there were reported from the Army, regulars and volunteers, 140 cases, with 79 deaths and 9 discharges for disability, and in 1899, 64 cases, with 41 deaths and 3 discharges, giving a total of 204 cases, with 120 deaths. The percentage of fatal cases was therefore 58.8, equivalent to 1 death in 1.7 cases. No special report on this disease was rendered during the past year.

## MALARIAL INFECTIONS.

During the two years, 1898 and 1899, 151,021 cases of malarial disease were reported, with 443 deaths and 179 discharges for disability. The cases constituted nearly 30 per cent of the total number of cases of disease reported—506,018. Intermittent fevers formed 67.8 per cent of the whole number of malarial cases; remittent or continued malarial fevers, 28.3 per cent; pernicious fevers, 0.4 per cent, and cases of malaria cachexia, 3.5 per cent. Of the deaths, 9 were ascribed to intermittent fevers, 151 to remittent or continued malarial fevers, 243 to pernicious fever, and 40 to malarial cachexia. One case in every 844 malarial cases ended in discharge for disability, and 1 in every 341 terminated fatally. Of the cases recorded as intermittents only 1 case in 11,378 had a fatal ending; of the remittent or continued fevers, 1 case in 283; of the pernicious fevers, 37.8 per cent, or 1 case in 2.64 cases, and of the cachexia cases 1 case in every 130 cases.

The admission rate for the Army, regulars and volunteers, in 1898 was 611.78, and in 1899, 574.41 per thousand of strength. In Cuba in 1898 this rate was 1,924.74, or 61.1 per cent of the total number of cases of all diseases taken on the sick report. In 1899 the malarial admission rate among troops in Cuba fell to 1,098.46 per thousand men, or 43.3 per cent of the total number of cases of disease.

In the Army, regulars and volunteers, in 1898, 349 deaths and 63 discharges for disability were occasioned by malarial diseases, giving the respective rates of 2.36 and 0.43 per thousand of strength. This high death rate was due to the gravity of the cases in Cuba, where 14.02 died per thousand of the troops operating on the island. In 1899, 94 deaths and 116 discharges gave the respective rates of 0.89 and 1.10 per thousand of strength, the death rate in Cuba having fallen to 2.50. In the Philippine Islands in 1898 the admission rate was 424.55, and the death rate 1.51 per thousand, and in 1899 these rates were 624.37 and 0.89.

The admission rate among the colored troops in 1898 was 1,086.62, and in 1899, 557.10. The high rate during the former year has already been explained (see p. 591).

From the following tabulation of the admission and death rates the character of the cases reported during the two years may be gathered:

1898—REGULARS AND VOLUNTEERS.

| | Army. | | In Cuba. | | In Porto Rico. | | In the Philippines. | | In the United States. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Admission rate. | Death rate. | Admission rate. | Death rate. | Admission rate. | Death rate. | Admission rate. | Death rate. | Admission rate. | Death rate. |
| Malarial fever: | | | | | | | | | | |
| Intermittent | 413.67 | 0.06 | 1,424.44 | 0.24 | 440.89 | ....... | 156.25 | ....... | 365.35 | 0.06 |
| Remittent or continued | 172.98 | .91 | 432.00 | 5.75 | 315.83 | 1.93 | 265.47 | 1.21 | 141.42 | .52 |
| Pernicious | 3.33 | 1.25 | 22.69 | 7.55 | 2.63 | 1.93 | .50 | .30 | 2.18 | .85 |
| Cachexia | 21.80 | .14 | 45.65 | .48 | 13.00 | ....... | 2.32 | ....... | 22.23 | .13 |
| Total malarial | 611.78 | 2.36 | 1,924.78 | 14.02 | 772.35 | 3.86 | 424.54 | 1.51 | 531.18 | 1.56 |

1899—REGULARS AND VOLUNTEERS.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Malarial fever: | | | | | | | | | | |
| Intermittent | 391.15 | ....... | 729.94 | ....... | 345.85 | ....... | 388.82 | ....... | 237.84 | ....... |
| Remittent or continued | 162.98 | 0.15 | 332.51 | 0.25 | 100.62 | ....... | 216.45 | 0.20 | 38.37 | 0.07 |
| Pernicious | 1.42 | .55 | 8.94 | 1.75 | 1.07 | ....... | 1.15 | .46 | .50 | .12 |
| Cachexia | 18.86 | .19 | 82.07 | .50 | 11.00 | ....... | 17.95 | .23 | 14.17 | .02 |
| Total malarial | 574.41 | .89 | 1,098.46 | 2.50 | 458.54 | ....... | 624.37 | .89 | 290.88 | .21 |

By way of comparison reference may be made on the one hand to the malarial rates of the civil war and on the other to those of the ten years of peace preceding the outbreak of the Spanish-American war. The mean annual admission rate of the white troops of the United States Army during the years of the civil war was 539.77 per thousand of strength with a death rate of 3.92 per thousand. The highest rates were reported for the fiscal year 1865–66 when the admission rate was 886.63 and the death rate 6.27.

The mean annual rates of the ten years of peace, 1888–1897, inclusive were: Admission rate, 87.19; death rate, 0.13.

Few special reports on malarial diseases and their treatment have been received during the year, but in some general reports the subject is discussed incidentally. See for instance, Captain Fauntleroy's report, page 641, and that of Major Hoyt, page 658.

The following special report is submitted:

### TWELVE MONTHS' OBSERVATION OF CUBAN MALARIAL FEVERS IN PINAR DEL RIO PROVINCE, BY ACTING ASST. SURG. THOMAS W. JACKSON, UNITED STATES ARMY.

Following the summer campaign of 1898 hundreds of cases of Cuban malarial fever were sent to the hospitals of the great cities of the United States and were there investigated, classified, and studied by clinicians provided with facilities which were necessarily absent from the field hospitals during the campaign. That this material was well utilized for the instruction of students and the medical profession is well known. From the date of formal American occupation, however, the military hospitals in Cuba have been fully able to utilize for the benefit of the medical profession the wealth of material which this tropical country provides.

During the twelve months covered by my observations and those of my colleagues there were treated in the military hospital at Pinar del Rio 1,904 cases of malarial fever. It has been my privilege to examine microscopically over 500 specimens of malarial blood. Every medical officer at this station has had at least one attack of malarial fever, in every case of the æstivo-autumnal variety, in his own person. The excellent literature upon the subject of malarial fevers provided by the Medical Department of the Army has been of untold value to us all in our observations. Particularly valuable have been the classical lectures of Thayer, and the writings of Manson, Cabot, and others. To Capt. G. C. Godfrey, assistant surgeon, and to Drs. William Alden and J. F. Presnell, acting assistant surgeons, I am indebted for courtesy and valuable assistance, and for permission to refer to their cases. The recorded facts and statistics cover the period from February 1, 1899, to February 1, 1900.

My personal observation of Cuban malarial fever began February 20, 1899, at Pinar del Rio, Cuba, at which place all the cases referred to in this paper occurred. The cases were confined to American soldiers, officers, and enlisted men, and civilians attached to the army stationed at this post. The commands stationed here during the dates covered included two battalions of the First Infantry, one squadron of the Seventh Cavalry, one battalion of the Third United States Volunteer Engineers, a company of the United States Volunteer Signal Corps, and a detachment of the Hospital Corps. The service of the cavalry, infantry, and hospital corps troops has been continuous; that of the engineer battalion and the Signal Corps company was confined to the months of February, March, April, and May. Civilian employees of the Quartermaster's Department, engaged in erecting Government buildings, and members of the pack train have been included as soldiers.

Of these commands one only, the First Infantry, took part in the Cuban campaign in the summer of 1898. The infantry, Signal Corps, and Hospital Corps arrived in Cuba in December, 1898, the cavalry in January, and the engineers in February, 1899. In the case of no command, save the infantry, had there been previous exposure to malarial infection. The stations of the cavalry squadron during 1898, previous to its arrival in Cuba in January, 1899, were in Arizona, Huntsville, Ala., and Macon, Ga.; at none of these places did malarial fever invade their camp. The stations of the engineer battalion following its organization at Jefferson Barracks, Mo., in the early summer of 1898 were Lexington, Ky., and Macon, Ga., the latter a winter camp. This command did not suffer from malarial fever to any appreciable extent previous to its arrival in Cuba in February. The Hospital Corps detachment was made up of men previously stationed at Camp Meade, Pa., and Augusta, Ga., and was free from malarial disease up to the time of entering Cuba. Although the First Infantry undoubtedly brought with it cases of Cuban infection dating back to the Santiago campaign, the regiment was so renovated by recruits and the discharge of men enlisted for the war only that I am of the opinion that less than 10 per cent of the cases of malarial disease which occurred in Pinar del Rio were cases of recurrence due to infection during the Santiago campaign. Of the recurrent Santiago infections the prevailing type was tertian intermittent, and the subjects often referred to a tendency of these attacks to recur after periods of twenty-one or twenty-eight days (or other multiple of seven days). This observation my colleagues and myself are inclined to believe correct. During the intervals the subjects appear to enjoy reasonably good health, and are able to perform their duties.

In my own person I observed the reappearance of æstivo-autumnal parasites in my blood, twenty-eight days after the onset of an attack of remittent fever lasting one week. Upon this occasion the temperature did not reach 100° F., but the presence of parasites persisted for some time in spite of quinine. Following this attack there occurred three outbreaks of the disease with an interim of seven days between attacks. In each outbreak the diagnosis was confirmed microscopically. Since this time several outbreaks have occurred, but the dates apparently bore no such relation to the previous attacks.

For the six months immediately following the arrival of troops at this post, men and officers were quartered in tents, all of which were floored and elevated from 2 to 4 feet above the ground. The camp site was upon a rolling plain, the ground was high and well drained, and distant from any marsh or swamp land. A number of ravines, or arroyas, carried away the surface rain water, and except in rainy weather these ravines were dry. The dews were very heavy. There were no jungles or excessive growths of tropical vegetation in the immediate vicinity of the camp, and the camp site seemed well chosen. Yet it is true that the classical conditions, climate, telluric and atmospheric, which have always been considered necessary for the propagation of malarial fevers were present in some degree at all times. Mosquitos of several varieties were incessantly present in great numbers.

The experiments and demonstrations looking toward the incrimination of the mosquito as the cause of malarial infection, which have been made during the past few years in various parts of the world by numerous observers, have undoubtedly fixed the guilt of many cases of malarial infection upon that insect. There has, however, been no proof adduced that infection does not occur in other ways. The artificial production of the disease in man has been accomplished, it is true, only by inoculation of human malarial blood and by mosquitoes fed upon such blood. All experiments looking toward artificial infection through the digestive and respiratory tracts have failed. Conceding all that is claimed by the most ardent advocates of mosquito infection, it is difficult to persuade ourselves that a malarial epidemic of such proportions as the one observed here in September, during which more than 50 per cent of the residents of the post suffered, could depend solely upon the mosquito for its spreading. (The strength varied from 1,768 in February, 1899, to 393 in January, 1900. The monthly number of admissions for all causes was highest in August, when 600 were recorded in a strength of 1,197; but the largest absolute number of admissions for malarial fever, 443, occurred in September when the mean strength was only 883 men).

No experiments with mosquitoes have been conducted at this post, but I was able upon one occasion to obtain from a mosquito human blood corpuscles containing malarial parasites. This occurred in the case of a colleague who had an attack of æstivo-autumnal fever lasting eight days. One morning some weeks later a mosquito full of blood was captured within the doctor's mosquito canopy. The body of the mosquito was punctured with a needle, the blood expressed upon a cover glass, mounted and examined with the one-twelfth oil immersion lens. Human red blood corpuscles were readily recognized, and, in two or three, small hyaline organisms with amœboid movements were observed. The doctor's temperature was taken and found to be slightly above 99° F., and a specimen of his blood showed similar hyaline forms slightly larger than those obtained from the mosquito, but not in great numbers. The expected paroxysm was averted by the prompt administration of quinine. This experiment was verified by Dr. J. F. Presnell. I can readily understand how this mosquito might have conveyed infection to another individual, and I have no doubt that numbers of such cases occurred.

Patients treated in this hospital for diseases entirely distinct from malarial fever developed it in our wards, having been in the hospital longer than the maximum incubation period. (See table of incubation periods in Thayer's Lectures on the Malarial Fevers, p. 100.) And yet until the possibility of infection being borne by the atmosphere is positively disproven, I am not prepared to lay the entire responsibility upon the mosquito. I do not believe that infection in any of our cases occurred through drinking water. From the first this entire command has been supplied with freshly-filtered drinking water only. In July the troops began moving into frame and stone buildings situated at the highest point in the town. Coincident with the removal into barracks there was a marked increase in the number of cases of malarial fever, which I believe was in no way associated with the change in quarters, but referable rather to recurrences and the advance of the rainy season, when malaria is notoriously worse in this country. So far as I have been able to observe, the mosquitoes are quite as numerous in the barracks as in the old camp, but the facilities for protection against them are much greater. All the troops were early provided with canopies of mosquito netting, but, obviously, these protect only during that portion of the twenty-four hours spent in bed, viz, about one-third of the time.

An effort has been made to destroy the breeding places of mosquitoes by drainage of near-by swampy land and the spreading of petroleum (kerosene) upon the surface of all standing water in pools, barrels, or other reservoirs; but I am inclined to coincide with the conclusion of Celli and Casagrandi,[1] that "while the problem of destroying mosquitoes is experimentally solvable, it will practically be so only when economic interest desires it." As they point out, the "opportune season for killing the larvæ is in the winter, when they are least in number in the waters, and new generations are not born." But in Cuba there is no winter. The destruction of the mosquito in Cuba is a problem not likely to be easily or immediately solved.

During the spring months the prevailing type of malarial fever at this station was the intermittent, nearly always of the tertian variety, and invariably associated with the presence of the benign tertian organism in the blood. Naturally quotidian fevers were frequently observed, but were always found to be due to several families of the tertian organism sporulating upon successive days. The quotidian fevers frequently changed to the pure tertian type and were promptly cured after the parasites were reduced to a single group of the tertian variety by quinine properly given.

I have at no time observed quartan fever or its parasite.

As the season advanced there was a progressive increase in the number of cases of continued malarial fever, and during the later months of the rainy season at least 50 per cent of the cases were, in my judgment, of the continued or remittent variety.

Malarial fever, as it occurs in Cuba, naturally divides itself into two classes, the mild and the severe. It is also divided clinically into two great classes, the intermittent and the continued or remittent. Generally speaking, the intermittent fevers are benign and mild, and the continued or remittent are severe and grave. In regard to the use of the term remittent, Manson[2] writes as follows: "Since it has been found that what was designated remittent fever is produced by quartan, tertian, and quotidian parasites—the fact of intermittency or remittency being more or less a matter of accident—it has been considered advisable to expunge the term remittent fever as indicative of a distinct species of plasmodium disease. * * * The intermittency or remittency of any given fever depends in great measure on the simultaneousness or the reverse of the maturation of the crowd of parasites giving rise to it. If all the parasites present are of nearly the same age, they mature approximately simultaneously and we have an intermittent; if they are of different ages they mature at different times scattered over the twenty-four hours and we have what is known as a remittent." Thayer[3] classifies malarial fevers, safely and conservatively, as: (1) The regularly intermittent fevers, (*a*) tertian fever (*b*) quartan fever, (caused by benign parasites). (2) The more irregular fevers, æstivo-autumnal fevers (caused by malignant parasites). This classification corresponds with the natural division into benign and grave fevers given above, and holds good for Cuban malarial fevers.

Of the regularly intermittent fevers it may be said that they differ not at all or very little from the type familiar to practitioners in the United States, and they may therefore be dismissed from this consideration with brief remark. As intimated above, the regularly intermittent malarial fevers are more prevalent in the spring and winter, but are to be observed at all seasons in Cuba and probably constitute 50 per cent of the total number of malarial fever cases.

There is but one absolute and accurate method of diagnosis, viz, the microscopical examination of a specimen of the patient's blood. All other methods are fraught with elements of error. The microscopic method is exact, accurate, and invariable. The plasmodium malariæ is always present in every case of intermittent fever and so readily found that the objection that an elaborate technical knowledge is necessary can not be advanced. Any medical man with a general knowledge of the use of the microscope can acquire in a short time, with the aid of one of the several excellent illustrated works upon diagnosis, the necessary technical skill. A knowledge of staining is not essential, as the best results are obtained with unstained blood. The prevalent idea that the previous administration of quinine makes useless a search for the plasmodium is not in my experience entirely correct. The presence of moribund or fragmented malarial organism in the blood plasma and of pigment bearing leucocytes and deformed red corpuscles is of great value and may be observed for some time after quinine has been administered; and, indeed, a certain number of motile organisms often persist in the blood for a short time after sufficient quinine has been given to terminate the fever.

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[1] Therapeutic Gazette, October 15, 1899: "Destruction of the mosquito," etc. A. Celli and O. Casagrandi.

[2] Tropical Diseases, p. 37.

[3] W. S. Thayer, Lectures on the Malarial Fevers.

Next in value to the microscopic method comes the therapeutic method of diagnosis by quinine. The dictum of Osler[1] that "an intermittent fever which resists quinine is not of malarial origin," laid down as a clinical rule for practitioners in the United States north of Mason and Dixon's line, holds as good for Cuba, but the qualifying word "intermittent" must be borne in mind. I shall presently submit charts of cases of continued malarial fever which resisted quinine in the most obstinate manner. A possible source of error lies in the method of administration of the drug. In my opinion, quinine should, whenever possible, be given in solution or capsules to insure its absorption. I have repeatedly recovered from the stools of patients quinine tablets of various makes and gelatine-coated pills which were readily compressible and apparently fresh. It is but fair to state that in every such case digestive derangement of some form was present, but it is well known that such derangement is fairly constant in all malarial fevers. Another element of error lies in the use of insufficient doses. The drug should be rapidly pushed to cinchonism, a condition caused in different individuals by widely variable doses.

The microscopic and therapeutic methods of diagnosis of intermittent malarial fevers are the only methods worthy of consideration. When the microscopic method is not available the therapeutic is most useful. Scientifically the therapeutic diagnosis should rather be a confirmative test to be used after the microscopic. If made use of first it invalidates to a certain extent the microscopic, but, as pointed out above, not entirely.

Clinically, intermittent malarial fevers are of three varieties: The tertian, most prevalent of all, in which the paroxysm recurs at intervals of forty-eight hours; the quartan, in which the paroxysm recurs at intervals of seventy-two hours, and the quotidian, in which the paroxysm recurs at intervals of twenty-four hours. It is doubtful whether a benign quotidian fever ever depends upon a special variety of the parasite, as do the tertian and quartan types. Quotidian recurrence can be very readily and perfectly explained by the fact of infection by several generations of either tertian or quartan organisms which sporulate upon successive days, thus giving rise to the twenty-four hours paroxysms. Most observers accept this explanation. Of the tertian organisms but two sets are required to produce quotidian paroxysms. I have invariably observed this combination in the cases of quotidian intermittent at this hospital. In the case of the quartan organism three groups of parasites sporulating upon successive days would produce quotidian paroxysms, but as no cases of quartan infection have been observed at this hospital, I have no personal experience with this form of quotidian fever. It should also be borne in mind that continued fever due to multiple infections of the tertian (benign) organism is theoretically possible, and Thayer[2] has observed one or two such cases. It is certainly a rare manifestation of tertian infection, as the tertian organisms show a tendency to arrange themselves in sharply defined groups.

The paroxysm of the regularly intermittent fevers usually consists of three stages—chill, fever, and sweat. Of 352 cases observed by Thayer at Johns Hopkins Hospital, 97.5 per cent had chills or chilly sensations. In the Pinar del Rio cases the percentage giving histories of chills is certainly smaller, but patients who upon first questioning do not recall a cold stage very frequently correct their statements. The chill may vary from the merest shivering sensation to a pronounced rigor. In those cases without prodromal malaise the chill is more frequently severe.

The diagnosis of the irregular malarial fevers is rendered less easy than that of benign malaria by reason of certain facts connected with the life cycle of the æstivo-autumnal parasite. As the young parasites increase in size they, with the red blood cells which contain them, show a decided disposition to retire from the peripheral circulation. As the hyaline forms of this parasite begin to accumulate pigment they become less and less numerous in the peripheral circulation and during the stage immediately preceding sporulation, and during that process they are but rarely to be found there. On the contrary, they are present in immense numbers in the blood of the spleen during and preceding the sporulating period. Although aspiration of the spleen to secure blood specimens is probably justifiable, occasionally it is certainly attended with greater risk than the needle prick for the extraction of a drop of blood from the ear or finger. I have in a few cases observed sporulation of the æstivo-autumnal parasite in blood obtained from the ear, but it is by no means a common observation. It is owing to this tendency of the æstivo-autumnal parasite to disappear from the surface circulation as it approaches sporulation that there is such difficulty in determining the exact time of its cycle. There is considerable difference of opinion upon this point, and it is doubtless a less constant period than that of the benign parasite. Thayer[1] believes that it may vary from twenty-four to forty-eight hours. Few observers have laid much stress upon the possibility of recognizing the youngest forms of the parasite (i. e., immediately following sporulation), but I believe the organism in this stage is more frequently to be recognized free in the blood plasma than is generally supposed. The similarity of the parasite in this youngest stage to particles of hæmoconien (Miller's blood dust) is to be borne in mind. It is sometimes difficult to distinguish between these bodies, particularly as they are very apt to coexist in the blood following sporulation, but careful discrimination will reveal that the parasite in this stage is endowed with a certain degree of motility, while the movement of the particles of blood dust is purely a molecular dancing movement. Moving currents of blood sometimes give the particles of hæmoconien the appearance of motility.

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[1] N. Y. Med. Journal, Nov. 4, 1899, p. 675.

[2] Thayer, Lectures on the Malarial Fevers, p. 116.

The size of the red blood cell containing a partly grown parasite of the æstivo-autumnal variety is almost invariably smaller than its fellows, while the partly or full grown benign parasite causes the corpuscle containing it to appear swollen and larger than its fellows. This is a point of differentiation which I deem of considerable value and more to be relied upon than the so-called "brassy" color of the corpuscle, caused by the invasion of the malignant parasite. This change in color is, however, usually apparent.

The presence of crescents and ovoids is of course indicative solely of the malignant parasite, but these bodies do not occur in the earliest stage of æstivo-autumnal fever, and when present are detected with some difficulty in the unstained specimen.

Flagellation is to be observed in both the benign and malignant parasites, and is therefore of little use in differentiation between them. A recent article by Craig,[2] detailing his observations of the flagellate forms of both varieties, is interesting in this connection.

A microscopic evidence of malarial disease not likely to be esteemed is the finding of pigment-bearing leucocytes in the blood. Often when the time of the examination is unfavorable for the discovery of the parasite itself it is possible thereby to make oneself reasonably sure of the recent presence of parasites in the blood, and thus assured perseverance will usually lead to the later detection of the parasite. Pigment-bearing leucocytes are so rare in all diseases other than malarial that their presence may be considered as almost diagnostic. Naturally this knowledge is of greatest value in the irregular fevers.

I believe all observers will agree that a simplification of terms descriptive of the various forms of malarial fever is highly desirable. To this end the elimination of terms which are really descriptive of symptoms of intercurrent diseases will greatly contribute. The possibility of the coexistence of malarial fever and some other distinct disease in the same individual must be admitted. My observation has included many such cases. It seems proper not to confuse physical signs and symptoms of distinct diseases occurring in the individual at the same time. Often the presence of leucocytosis discovered in search for parasites leads to the detection of some other disease. Ordinarily the blood of a malarial-fever patient does not show an increase of leucocytes.

Æstivo-autumnal malarial fever may be properly classified into types, in accordance with the predominance of certain symptoms, and in nearly every case it may be shown that these symptoms are evidences of involvement of special organs. Thus headache and delirium, intestinal pain and diarrhea, may indicate that the brain and its coverings, or the intestines, are being especially invaded by the parasites. In this manner we may use the terms descriptive of types, gastralgic, cardialgic, comatose, hemorrhagic, bilious, etc. I have seen no type of fever which could be properly classified as cardialgic or pneumonic, although I have observed intercurrent malarial fever and heart disease, and intercurrent malarial fever and pneumonia.

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[1] Lectures on the Malarial Fevers, p. 69.

[2] Observations on Flagellated Malarial Plasmodia. Descriptive of two varieties. C. F. Craig. N. Y. Medical Journal, December 23, 1899.

The patient suffering from an attack of æstivo-autumnal malarial fever of moderate severity may present the following objective and subjective symptoms: Malaise and anorexia for twenty-four hours, followed by an initial chill (which may not be repeated), a coated tongue, which is almost invariably increased in all its dimensions and shows the indentations of the teeth upon its borders, headache, nausea, vomiting, diarrhea, suffusion of the eyes, an icteric condition of skin and sclerotics, pain in the back and limbs, and epistaxis. In short, the picture may simulate closely the clinical picture of many of the acute infectious diseases, including yellow fever and typhoid. Albumen may be present in the urine, rarely, however, during the first days. The rise of temperature is usually gradual, compared with the rise in the regularly intermittent fevers, and may begin previously to the chilly stage, if there be one. At the end of twenty-four hours a decline in temperature is usually noted, and if the infection be a mild one or promptly recognized and treated, a second rise may not occur. Both onset and decline of fever in the æstivo-autumnal paroxysms are less sudden than in the regularly intermittent variety. From this point the disease may take on one of several types. If the infection be one of a single crowd of parasites of approximately the same age, and if sufficient quinine properly timed, either by design or accident, be administered, the initial paroxysm may be the only one. Or if the quinine be so administered as to destroy all the parasites but a few, and successive doses complete the destruction, the temperature may hover slightly above the normal point for a day or so. Cases of these types are not uncommon. The temperature curve may show remissions or even intermissions at intervals of from twenty-four to forty-eight hours, either with or without the classical accompaniments of chill and sweat; but in my Cuban experience such regular recurrences of paroxysms in fevers due to æstivo-autumnal parasites have been rare indeed, although charts have been made to show the thermometer readings every two or four hours. The Italian observers and others have apparently shown a definite periodicity in certain of these intermittents and remittents. If these observations are correct, I should be inclined to look elsewhere than to the parasites for the cause of this periodicity. I am of the opinion, and my opinion is strengthened by my microscopic observations, that the æstivo-autumnal parasite is, approximately, a quotidian parasite, but infection with multiple generations, sporulating at all times of the twenty-four hours, is so overwhelmingly the rule that one can readily understand why these fevers are irregular or continued rather than intermittents or remittents. Fevers of the first-described type, viz, those terminating at the end of twenty-four hours, are not infrequently mistaken for benign tertian infections. The true character of the infection, however, may be revealed by the microscope.

If at the end of the first period the fever becomes continuous, the group of symptoms commonly described as typhoid gradually appear, and the most acute observer is frequently long in doubt as to the true nature of the fever unless he has recourse to the diagnostic microscope.

The clinical picture of a severe case of continued malarial fever is startlingly like that of enteric fever. Here the therapeutic diagnosis by quinine often fails, but the microscope and the typhoid serum test remain our faithful servants. It is far from my wish to throw the slightest discredit upon the other methods of differential diagnosis. My desire is to emphasize the great similarity of the clinical pictures of enteric fever and continued malarial fever of the æstivo-autumnal variety and the possibility of absolute diagnosis. Fortunately cases of the last-described type do not constitute more than about 5 per cent of the whole, or 1 in 20. It should be borne in mind that the æstivo-autumnal infections run the gamut of severity, and that very mild cases as well as very severe ones may occur. There is danger that the mild infections may receive inadequate treatment and may assume pernicious types in later manifestations.

The occurrence of combined infections has already been referred to. Among the combinations observed in this series were those of malarial fever with dysentery, typhoid, tuberculosis (pulmonary), syphilis, and venereal diseases of all kinds, and various skin diseases.

One of the most interesting sequels of æstivo-autumnal malarial infection observed was a case of double retinitis pigmentosa (so pronounced after repeated ophthalmoscopic examinations) in an individual whose previous history was entirely negative.

It is frequently difficult to decide whether or not dysenteries, apparently of the simple catarrhal variety which occur coincidently with malarial fever, are in any way referable to the latter disease. Their apparent cure in certain cases by quinine strongly points to a relation between the conditions. The ambulatory fever cases are most apt to present this symptom.

No case of amœbic dysentery or liver abscess has been observed at Pinar del Rio.

The possibility of confusing cases of insolation with malarial fever is to be borne in mind.

A febrile malaria exists probably more frequently than is generally supposed, particularly in subjects who have experienced several attacks of malarial fever. It probably never occurs except as a sequel of the latter. Its diagnosis can only be made microscopically. I have observed a number of cases, in all of which the parasite was of the æstivo-autumnal variety. The symptoms are malaise, headache, nausea, and sometimes vomiting, occurring with an abortive chill or sweat.

Naturally malarial cachexia has been frequently observed in the subjects of repeated æstivo-autumnal infections. It is almost invariably associated with a secondary anæmia, often rather profound in degree. It is in this condition that administration of arsenic is valuable. I have found arsenic utterly valueless in the treatment of acute malarial fevers. The experiment of administering Fowler's solution in two and three minim doses three times a day to each man in the command was tried at this post, and at one other in this province, during the spring months of 1899. This procedure was based upon the alleged prophylactic and curative value of arsenic in the malarial fevers. It is only necessary to refer to the increased number of cases during the following months to show its utter uselessness in preventing malarial infection.

Contrary to the experience of recent writers, the urine in our malarial fever cases rarely contained albumen. Even in our gravest cases its occurrence was exceptional. Hæmoglobinuria was observed but infrequently, and never as a post-malarial affection. No case due to quinine administration was observed. The spleen was usually demonstrable in cases lasting four or five days, and, in some instances, was the seat of considerable pain. Malarial hepatitis was observed in one case of recurring æstivo-autumnal fever. Jaundice of a moderate degree was rather frequently observed, but severe catarrhal jaundice was a much less frequent complication than in a similar number of typhoid fever cases observed in the military camps in the United States in 1898. The jaundice in malarial fever cases is in proportion to the amount of red-cell destruction, but, as Thayer points out, it is due to an excessive production of bile, the result of the effort on the part of the liver to dispose of the excessive amount of pigment in that organ.

The opportunities for observation of pathological conditions post-mortem have been extremely limited, as no autopsy has been made. In the series of 1,904 cases upon which this report is based but 4 deaths occurred. Of these 4 fatal cases but 1 occurred in my own service. The prominent symptoms in these cases are noted below.

I. T. E.; pernicious malarial fever closely simulating typhoid fever, but Widal test negative. Malarial parasites (æstivo-autumnal) present in variety of forms in the blood on admission and throughout the disease. Gastric crises and profound sweats, at which times large numbers of young organisms were found. Spleen greatly enlarged. Urine acid; 1022; no albumen. Violent delirium, coma; death on eighteenth day.

II. M. J.; pernicious malarial fever (æstivo-autumnal parasite), duration 4 days; high temperature, wild delirium, profuse sweating, coma 36 hours, ending in death.

III. W. W.; pernicious malarial fever (æstivo-autumnal parasite), duration 18 days, high temperature, no delirium; general purpura appeared upon ninth day, bleeding from gums, left hemiplegia, coma (brief), preceding death.

IV. W. B.; pernicious malarial fever (æstivo-autumnal parasite), two attacks, duration of first 13 days. Second attack, after interim of 8 days, terminated fatally at end of a week; a few purpuric spots observed; coma 12 hours; death. This man served through the campaign in the Philippines without illness. Upon reenlisting he came to Cuba and was immediately taken ill with malarial fever.

It will be seen that all of the fatal cases developed coma, and that cases III and IV were distinctly hemorrhagic, case III being a well marked instance of cerebral hemorrhage.

When we consider the death rate of this series, less than one-fourth of one per cent of all cases, and remember that these cases were all cases of West Indian malarial fever, reputed world-wide to be peculiarly pernicious, we are convinced more forcibly than ever before of the inaccuracy and untruthfulness of the statistics relating to malarial fevers in every city of the United States. Truly this reflects most discreditably upon the diagnostic acumen and abilities of the physicians of the United States, and we may reasonably expect to see a wonderful decrease in the total number of malarial fever cases, and of deaths from the same, in future public health statististics as the scales fall from the eyes of the men who have made these statistics untruthful and misleading.

There remains to be considered the important matter of treatment. The observation of a large number of cases within a year has brought home to me certain convictions. First of all, I am convinced that quinine is a specific in the treatment of malarial fevers of all kinds. This statement may seem to be out of harmony with some of my expressions in the foregoing pages, but in reality it is not so. I have stated and shown by charts that certain fevers, undoubtedly uncomplicated malarial fevers, withstand for a long time very heavy doses of quinine. But I have not intimated, I believe, that these cases were not ameliorated, kept within control, and eventually cured by the drug. That many more than four deaths would have occurred in the 1,900 cases referred to without the heroic use of quinine, I am morally certain. The fact that some of these cases have been able to take without perceptible ill effect as much as a thousand grains of quinine in a short time and have eventually recovered, and the fact that for one case which persists for a time in spite of quinine twenty perhaps will be immediately cured, constitute for me evidence entirely convincing as to the specificity of quinine.

Considerations of the utmost importance are the time and method of administration and the dosage.

The proper time to administer quinine is at a period sufficiently in advance of the sporulation of the parasites to assure the absorption of the drug into the blood, and its presence there in solution when a sporulation occurs. It is generally agreed by observers that the parasite within the red blood cell is protected to a certain degree, varying with its stage of development and the degree of degeneration of the red corpuscle, and that it is most vulnerable to the destructive action of quinine when free in the plasma immediately after segmentation and sporulation. The important things to know, then, are the length of time elapsing between the administration of the quinine and its presence in solution in the blood and the exact time of sporulation. The former naturally depends upon the method of administration, whether by mouth or needle, and if by mouth upon the solubility of the drug and the activity of absorption in the individual. The approximate time of sporulation of the benign parasites, tertian and quartan, is fortunately known after the first paroxysm. I consider the method of administering a dose of quinine by the mouth two hours before, one hour before, and during the paroxysm, and a fourth dose an hour later, a rational and effective method in the regularly intermittent (benign) infections.

In the infections of the malignant (æstivo-autumnal) parasite, rational treatment is rendered more difficult by the uncertainty of the time of sporulation of any given group, and the infrequency of infection by a single group. As has been pointed out, these cases are usually cases of multiple infection, and groups are probably sporulating throughout the entire twenty-four hours, and parasites sporulating are but rarely perceptible in the peripheral circulation. The indication, therefore, would appear to be to keep the patient's blood by means of quinine in a condition as toxic as possible to the young organisms as they escape into the plasm after sporulation. This can only be accomplished by the exhibition of quinine at rather frequent intervals during the entire twenty-four hours. If the case be distinctly paroxysmal we may be guided by the fact to give larger doses before and at the time of the paroxysms. I believe a frequent cause of failure is the omission of quinine exhibition during the night. In a general way I believe it is well to give quinine at intervals of three hours throughout the twenty-four.

Quinine may be introduced into the circulation by several routes, viz, through the digestive tract by mouth or rectum; through the skin by inunction or hypodermatic injection, and by direct injection of a solution into the veins. Theoretically, the direct injection into the veins seems to be the most rational method, overcoming the possibility of failure of absorption when given by mouth and when thrown directly into the tissues. I have never made use of this method, but shall certainly do so in severe cases hereafter if the opportunity presents. For practical purposes the methods of inunction and rectal administration may be disregarded. In most cases quinine given by the mouth in acidulated solution or capsules will ultimately destroy the malarial parasites in the blood provided the stomach remains tolerant. When the stomach loses its tolerance before the destruction of parasites is complete, resort must be had to hypodermatic or intravenous injection. I believe the administration of ginger, powdered in capsules with quinine, or in syrup added to solutions of quinine, or in the form of ginger ale, assists materially in preserving the tone and tolerance of the stomach.

As to dosage I am guided by effects, always bearing in mind the points relative to time set forth above. Microscopic and thermometric observations are better indices of the effect of quinine in malarial fevers than the subjective sensations of the patient. In a general way I may say that I have found 2, 3, and 5 grain doses of quinine by the mouth, insufficient in the Cuban malarial fevers; I prefer doses of 10, 12, or 15 grains. If resort must be had to the hypodermatic method certain precautions are indispensable. A complete and sterile solution not extremely concentrated, an aseptic instrument, and an aseptic technique will exclude the possibility of abscess formation. If for any reason the solution is not absorbed, necrosis of the soft tissues containing it may occur, but these pseudo-abscesses will be found not to contain pus. The bimuriate of quinine and urea, by reason of its complete solubility, has given the best results. A syringe larger than the ordinary hypodermatic syringe should be used and the needle should penetrate to the deeper tissues of the back or buttock. The arm is not a favorable site for these injections. An antitoxin syringe two-thirds full of a solution of 10 grains of the bimuriate of quinine and urea may be used. I have found this dose, repeated according to effect, about the proper one. The greatest care to secure asepsis in preparing the skin, solution, syringe, and the hands of the operator must be observed if abscesses are to be avoided. The injections are frequently followed by pain, which sometimes persists for several hours. The use of antipyretics and analgesics, such as phenacetin and acetanalid in various combinations, undoubtedly adds greatly to the comfort of the patient, and under ordinary circumstances I can see no good reason why they should be withheld.

The various conditions of asthenia, hyperpyrexia, diarrhea, delirium, etc., should be met with appropriate treatment as they arise. It seems needless to add that the conservation of the patient's vital forces and strength by proper stimulation, nourishment, and nursing is of as great importance in malarial as in other fevers.

## DENGUE.

At Columbia Barracks, Quemados, Cuba, early in the second week of September, 1899, several cases of fever were reported in one of the companies of the Eighth Infantry. The disease spread from this to adjoining companies until it became epidemic. On October 10 the troop barracks of the Seventh Cavalry became invaded, that nearest to the infantry camp being first infected. The daily sick report of this regiment rose from 52, on October 10, to 108 on October 18. The artillery troops became affected October 23, and in this command the maximum was reached on the 28th of the same month. On October 18 the post report showed a maximum of 291 cases of this fever under treatment.

The disease was carefully studied by Acting Asst. Surg. Najeeb M. Saleeby. Thermographs and histories of 159 of the cases were recorded, and to his report were added many diagrams showing the relative positions of the various barrack buildings and the curves of prevalence of the disease in each. Dr. Saleeby recognized a febrile disease of one paroxysm declining to normal on the third or fourth day, but in many of the cases having a second and milder paroxysm which prolonged the return to the normal until about the sixth or seventh day. Quinine had no curative influence, and microscopical examination of the blood demonstrated the absence of the malarial parasite. The disease was distinguished from yellow fever by its benign character, no death having occurred, and by the absence of albumen in the urine, jaundice, and internal hemorrhages. Dr. Saleeby rejected the suggestion that his cases were cases of dengue, and held that they were either mild cases of yellow fever or cases of a peculiar and hitherto undescribed fever (one of the calenturas of the Cubans), which probably has an acclimating influence and may hereafter be shown to be protective against attacks of yellow fever. In these views he is not sustained by Capt. A. N. Stark, assistant surgeon, United States Army, the post surgeon, who was himself one of the sufferers from the disease and who regarded his attack as one of dengue. Maj. Jefferson R. Kean, surgeon, United States Volunteers, chief surgeon Department of Havana and Pinar del Rio, also regarded the febrile outbreak as one of dengue, and reported that about 380 of the cases borne during October on the sick report of Columbia Barracks as malarial fevers involved errors of diagnosis. He considered such a sudden and enormous increase in malarial prevalence in the absence of any altered condition of the sanitary surroundings to be highly improbable, and from the character of the cases regarded the outbreak as an epidemic of dengue. He attributed these errors to the absence of systematic blood examinations on admission, and to the apparent response of the fever to the therapeutic test. In tropical malaria quinine often requires four or five days to bring the temperature down, and as in dengue the temperature falls to normal in about this time, the specific treatment is credited with the result. Nevertheless, in discussing Dr. Saleeby's paper, Major Kean agreed with the writer that our nosological table does not contain all the fevers of the Tropics. He continued:

> The short mild continued fever of about a week's duration, with a descending temperature curve from the first or second day, is an old acquaintance. Whether this is an acclimatizing, i. e., a very mild sporadic form of yellow fever, is an interesting and important subject for investigation. Dr. H. R. Carter, Marine-Hospital Service, recently in conversation advanced the following facts, which are suggestive in this connection: All quarantine authorities agree that ten years' residence in Havana entitles a man to be considered immune; that is, that in that time he will certainly have had yellow fever or an immunizing fever. The Spanish immigration—nonmilitary—for years past has been on an average 15,000 a year. Of these, by a moderate estimate, 5,000 make their home in Havana. Approximately 5,000 children are born in Havana each year. Supposing that half of these die before they reach the age of 10, we have 2,500 a year to acquire immunity in the same way that the Spaniards do. Thus we should have 7,500 cases a year of immunizing (yellow) fever. The average annual civilian death rate in Havana from yellow fever is 210, which, with a death rate of, say, 30 per cent, would give 700 cases of clinically recognized yellow fever a year. Thus we would have left 6,800 persons a year who acquire immunity through fevers not to be recognized as yellow fever in the home of that disease.

The following extracts from Dr. Saleeby's report may be of interest:

> *General description.*—The disease is ushered in by the same variety of initial symptoms as the other specific fevers. But two modes of onset seemed to distinctly prevail and very eminently represent the manner of the declaration of the disease. In the first class of cases the attack sets in with headache and a slight rise of temperature. These gradually and progressively increase in intensity. The headache becomes very severe and frontal, and is soon followed by intense general muscular pains in the back, loins, and lower extremities. They are rheumatic and grippe-like in character and are very distressing. As the temperature rises slight chills or chilly feelings are felt at intervals, alternating with feverishness. If the temperature rise rapidly, a severe chill may occur. The fever continues to increase with or without a slight interruption, and generally attains its maximum height on the second day. The temperature then ranges from 102° F. to 104° F. and the pulse from 80 to 104, febrile and full. The headache and the muscular pains already intense become excessive. The patient is completely prostrated in a severe case. Delirium may occur. With the headache there is dizziness, insomnia, and restlessness. The eyes are congested and ache, and the face is flushed. There is complete anorexia and nausea and sometimes vomiting. The bowels are sometimes normal, but often present diarrhea or constipation. Diarrhea is more general than constipation, and soreness of the abdomen is not uncommon. This condition may be maintained during the third, and less frequently the fourth day of the disease, but generally the fever begins to decline after the second day and reaches normal between the fourth and seventh day. With the decline of the fever all the other symptoms abate. The nausea and vomiting are the first to cease. The headache holds closer relation to the temperature than the muscular pains, and generally lasts a day or two after the termination of the fever, while the muscular soreness continues longer. During convalescence bowel disturbances are not rare.
>
> In a minority of the cases the maximum temperature is attained on the first, the decline begins on the second, and the fever may terminate as early as the third day. In another minority, consisting of about one-third of all the cases, a second rise of the fever follows after a brief intermission of less than one day. With this secondary rise the same symptoms occur, but they are shorter in duration and milder in character than during the first paroxysm. The occurrence of the second paroxysm does not necessarily indicate a severe attack.
>
> In the second class of cases the onset is very sudden and violent. The attack

starts directly with a severe chill, which is immediately followed by excessive headache and very intense muscular pains. The maximum temperature is generally attained on the first day. There is immediate prostration and severe gastric disturbance.

The temperature chart represents either one paroxysm of fever or two paroxysms separated by a brief intermission. About two-thirds of the cases present one paroxysm only. These prevail during the first period of the epidemic and at every outbreak. The first paroxysm indicates a continuous run of fever for from three to seven days. It is made up of two parts—a rapid rise, representing the stage of development, and a slow, gradual decline. In case the maximum temperature is reached on the third or fourth day, or the height of the fever be maintained more than one day, the stage of fastigium would then be represented by an intermediate oscillating curve.

The rise is completed either on the first or the second day. In the first case it is a straight, nearly vertical line, and in the second it is marked by a slight interruption after the first day. The remission after the second day is generally marked. The decline is nearly always by lysis. It is either a regular stepladder-like fall or a more or less gradual descent. To linger at 100° for one day or so is not an uncommon irregularity. Another rare interruption is caused by a secondary rise of the temperature on the fourth or fifth day. This may reach the level of the former rise and then end by crisis, or fall short of that, and then descend a steeper incline than it would have done otherwise.

In 63 out of 159 cases represented by the charts the fever returned after a short intermission and exhibited a second paroxysm. The intermission was generally less than one day, and seldom exceeded this limit. The temperature then may remain at normal or descend 1° or more below that, chiefly when the administration of quinine is free and prolonged. The second paroxysm might be of a remittent or continued type and resemble the first, or it might be intermittent and variable. The temperature rises to 100° and 101°, and its duration varies from one to four days.

*Prognosis.*—In mild cases some of the patients kept up and did not take to bed, and resumed their duties three days after the fever ended. Convalescence was rapid as a rule; complications were very rare; no death occurred.

*Diagnosis.*—This disease simulates remittent malaria and dengue. The former was presumed at the first outbreak, but the nature of the disease developed quickly and the difference was soon realized. Quinine utterly failed, except in increasing the distress of the patients, and no haematozoa were found in the blood. The similarity to dengue was greater on account of the severity and nature of the pains, but against this I urge the following facts: The infection seemed to distinctly arise from the ground soil of a certain locality and spread out by contiguity. The epidemic did not spread as such outside the limits of our camp, though the disease evidently existed in the vicinity and in Havana. No epidemic of dengue existed at the time in this province. The disease was preeminently a fever of one paroxysm; and in case there were two paroxysms the second followed immediately after a real intermission of less than one day's duration. The disease did not affect the joints at all, and was not accompanied by any distinctive general eruption. The eruptions observed simulated the primary eruption of dengue and only occurred in about 7 per cent of my cases. The second distinctive general eruption of dengue was never seen so far as I know. Not convinced, however, that the disease was either dengue or yellow fever, I adopted for the time being the term "simple continued fever," in recognition of its well-defined type.

Lately I interviewed some of the eminent physicians of Havana on this subject. They all remarked the close similarity the charts present to yellow fever, but on account of the absence of albumen in the urine and jaundice, and on account of the benignity of the epidemic, they pronounced them different and separate. Some called this fever the "acclimation fever of Cuba," and claimed that it gives immunity from yellow fever. Others called it "fievre inflammatoire," and claimed that the chief difference between this and yellow fever is the absence of albumen in the urine. Other indefinite terms like "infectious fever" and "gastric fever" were suggested. Dr. Tomas V. Coronado, who is a very reliable authority on the fevers of Cuba, tells me that what some call inflammatory fever is really yellow fever. He holds that dengue might occur in an epidemic form without eruption, but that it does not exist at the present time in Cuba. He also affirms that the character of this epidemic and the manner of its extension strongly contraindicate dengue, and tends to ally it with yellow fever.

Lacking the confirmatory evidences on the question, I remain undecided as to the real diagnosis. But, in considering the views and different statements of the native physicians on yellow fever and other unclassified diseases they describe, I simply remark that either there exists in Cuba an endemic disease that holds a close similarity to yellow fever, and which has not yet been recognized and differentiated, or that a benign form of yellow fever may exist.

*Treatment.*—The disease having been benign, the treatment was chiefly symptomatic, and was directed mainly to relieve the pain and reduce the temperature.

## FEVERS OF UNDETERMINED CAUSATION.

*Admission rates per thousand of strength of the Army, regulars and volunteers, for the calendar years 1898 and 1899.*

| Year. | Army. | Cuba. | Porto Rico. | Pacific islands. | United States. |
|---|---|---|---|---|---|
| 1898 | 28.09 | 76.57 | 45.85 | 59.96 | 21.59 |
| 1899 | 25.48 | 41.75 | 12.07 | 37.04 | 8.34 |

In 1898, 4,152 cases with 1 death, and in 1899, 2,689 cases, none fatal, were recorded, giving the rates of admission shown in the above tabulation. In general terms these cases were either malarial or typhoid, the probability being that the majority resulted from malarial influences, for the annual admission rates of these undetermined cases were highest in Cuba and the Pacific islands where the prevailing fevers were malarial, and the curve of their seasonal prevalence in 1899 coincided with that of malarial fevers. In Cuba they prevailed chiefly during the four months August to November, inclusive, the highest rate occurring in October, the month of maximum prevalence of malarial diseases and of minimum prevalence of typhoid. The maximum rates of typhoid fever occurred in April and May, when the rates of the undetermined fevers were considerably below the mean of the year. Again, in the Philippines, the rate of admission of these fevers was above the mean of the year when the typhoid rate was low, and considerably below the mean of the year, from February to August, when the typhoid rate was high; but the maximum rate of the malarial and of the undetermined fevers occurred in November, and the minimum rate of both in February.

## DIARRHEAL DISEASES.

The following tabulation presents the prevalence and results of diarrheal diseases in the Army, regulars and volunteers, as a whole, and of those parts of it stationed in Cuba, Porto Rico, the Pacific islands, and the United States:

[Ratios are per thousand of the strength.]

| Commands. | 1898. | | | | | | 1899. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cases. | Ratio. | Discharges. | Ratio. | Deaths. | Ratio. | Cases. | Ratio. | Discharges. | Ratio. | Deaths. | Ratio. |
| Army | 57,436 | 388.62 | 65 | 0.44 | 214 | 1.45 | 40,180 | 380.69 | 95 | 0.90 | 226 | 2.14 |
| Cuba | 2,796 | 335.05 | 1 | .12 | 77 | 9.23 | 8,709 | 434.35 | 10 | .50 | 29 | 1.45 |
| Porto Rico | 4,370 | 767.61 | 2 | .85 | 8 | 1.41 | 2,023 | 542.80 | 6 | 1.61 | 10 | 2.68 |
| Pacific Islands | 3,959 | 399.60 | 20 | 2.02 | 25 | 2,52 | 25,249 | 642.80 | 62 | 1.58 | 180 | 4.58 |
| United States | 46,120 | 374.19 | 42 | .84 | 104 | .84 | 4,027 | 95.45 | 17 | .40 | 7 | .17 |

In the Army of the United States, during the decade 1887-1896, the average annual admission rate for diarrheal diseases was only 107.09 per thousand of strength, with 0.17 per thousand men as the rate of discharge for disability and 0.10 as the death rate. In 1897 the admission rate was only 73.17 per thousand, with 0.11 as the discharge rate and no death. In 1898, however, the admission rate rose to 388.62 with 0.44 as the rate of discharge and 1.45 as the death rate; and in 1899 it continued high, 380.69, with rates of discharge and of death about double those of the preceding year.

This large increase in the prevalence of diarrheal diseases in 1898 was consequent on the great aggregation of untrained volunteers in our camps in the United States, and the exposures of our troops, regulars and volunteers, on active service in Cuba, Porto Rico, and the Philippine Islands. Among the large number of troops in the camps in the United States the admission rate was over three times and the death rate over six times greater than the annual averages of the decade mentioned. This was due to dietetic errors and unnecessary exposures on the part of raw troops. Although the admission rate of the commands in Cuba was somewhat lower than that of the troops in the United States, the high death rate of 9.23 per thousand of strength among the former indicates a wholly different type of diarrheal trouble. Among the regular troops in Cuba at this time, 1 case in every 9.8 was reported as dysenteric. In the Philippines the death and discharge rates were relatively high, 2.52 and 2.02, respectively, per thousand of strength; but in Porto Rico, although the prevalence was great, there was fortunately no corresponding increase in the gravity of the cases. In Porto Rico there was only 1 death in 546 cases; in the United States, 1 in 443 cases; in the Pacific islands, 1 in 158 cases, and in Cuba, 1 in 36.4 cases.

In 1899, under the better sanitary conditions which resulted from the experience of the preceding year, the admission rate for diarrheal diseases in the United States fell to 95.45 per thousand of strength, and the death rate to 0.17, satisfactory approaches to the normal rates of times of peace; but the rates of the Army as a whole were kept high by high rates in the Islands. In the Philippines the admission rate became increased to 642.80 and the death rate to 4.58 per thousand of strength. In Porto Rico, also, the dysenteric character became more developed, but in the garrisons of Cuba the dangerous type of the disease was markedly diminished. In the United States there was 1 death in 575 cases; in Cuba, 1 in 300 cases; in Porto Rico, 1 in 202 cases, and in the Philippines 1 in 140 cases.

The absolute number of cases of dysentery in the Philippine Islands, as distinguished from acute or chronic diarrhea, can not be gathered from the reports, as in many instances the same case is recorded on one report as diarrhea and on another as dysentery.

*Dysentery.*—Lieut. Richard P. Strong, assistant surgeon, United States Army, a member of the board on the study of tropical diseases, see page 21, made a careful study of dysenteric cases in the laboratory of the First Reserve hospital, Manila, P. I., in which work he was assisted by Hospital Steward W. E. Musgrave, M. D., pathologist of the hospital. They reported the results of their investigations June 17, 1900. During a period of ten months prior to this date, 9,063 cases were treated in the hospital, and 1,328 of these, or 14.64 per cent of the total cases, were cases of dysentery. Of these dysenteric cases, 581 were returned to duty from the First Reserve hospital; 125 ended fatally in the hospital; 283 were transferred to other hospitals in the Philippines, and 339 were sent to the United States for possible benefit from the sea voyage and change of climate. Their studies included 111 necropsies on dysenteric cases, 21 of which, on anatomical grounds, they classified as acute specific dysentery, 11 as subacute specific dysentery, and 79 as amœbic dysentery. A bacillus was isolated in 17 of the 21 cases classified as acute specific dysentery, and in 2 of the 11 subacute cases. In 1 of the former and 2 of the latter, this bacillus was not looked for. In 26 of the amœbic cases the bacillus was not found; in the remaining 53 it was not looked for. In 68 of the 79 amœbic cases motile amœbæ dysenteriæ were found. The bacillus isolated by Drs. Strong and Musgrave is similar to that discovered by Shiga in 34 of 36 cases studied in Kitasato's laboratory in Tokio, in 1898, in connection with the epidemic of dysentery then prevailing in Japan. They regard this bacillus dysenteriæ as the specific cause of what they have called acute and subacute specific dysentery. The blood serum of these cases usually exercised a marked agglutinative reaction on this bacillus. This reaction was observed as early as the third day and was generally distinctly manifest by the fifth or sixth day. In one grave case which proved fatal on the fourth day there was no reaction with the serum, either before or after death. The onset and progress of amœbic and specific dysentery are described as somewhat different. In the amœbic cases they found generally a gradual onset and an irregular course marked by periods of intermission and exacerbation of the diarrhea, with a tendency to chronicity and the frequent occurrence of abscess of the liver. In the specific cases, on the contrary, the onset is usually abrupt, the stools at first containing mucus which afterwards becomes streaked or colored with blood. The movements increase in frequency until finally the control over the sphincter appears to become lost. Straining and tenesmus are often excessive. There is great thirst and the tongue has generally a whitish coat. Extensive hemorrhages are unusual, but occasionally occur. Toward the end the movements become less frequent and may cease altogether shortly before death. With all this the accompanying pyrexia may not be high. The pulse is about 100, becoming very rapid as the patient dies from cardiac exhaustion. Nausea and vomiting are uncommon, but there is often tenderness on deep pressure over the colon. Recovery from these severe attacks is rare. Death or recovery takes place generally within two weeks. In the cases which recover, the urgency of the symptoms becomes gradually lessened. Recovery may then be early and convalescence be established by the fifteenth day. In other cases the disease may become subacute and last for months.

This subacute or chronic stage was carefully studied and reported upon March 23, 1900, by Dr. Chas. F. Craig, acting assistant surgeon and pathologist of the U. S. General Hospital, San Francisco, Cal. Dr. Strong has said that 339 of the dysenteric cases of the First Reserve hospital were sent to the United States. Here they were studied by Dr. Craig as cases of chronic dysentery from Manila. He investigated the stools from 205 cases and the morbid anatomy of 25 necropsies. In his report he divides the cases into three classes, (1) the follicular, (2) the pseudo-diphtheritic, and (3) the gangrenous, which he considers rather as stages in the same pathological process, the second and the third as acute forms engrafted on the first.

The follicular cases were at least of two months' duration. There was but little tenesmus. The character of the stools is very fully described in Dr. Craig's report. Little blood was visible to the naked eye, but it was found pretty constantly on microscopic examination; mucus and pus rather abundant; pus cells often containing bacteria; intestinal epithelium abundant, sometimes in sheets with protoplasm granules and the cells sometimes vacuolated; bacteria in immense numbers, staphylococci, streptococci, and bacilli, the last of which preponderated. There was one long, slender bacterial form present in nearly all the cases, and in immense numbers; yeast cells frequent; cercomonas in 6 cases; anguillula in 1.

The morbid anatomy of the follicular cases may be briefly stated as follows: In all cases the stomach was congested in patches and showed areas of atrophy. The small intestine varied in color from nearly white to bright pink; coats very thin. Large intestine dull gray or slate colored, sometimes with very dark patches believed to be due to extravasated blood undergoing pigmentary change; coats thickened, in one case cartilaginous; calibre diminished; mucous membrane usually of a gray slate color, often with brownish pigmentation and acute congestion, and thickened; the follicles enlarged or ulcerated, or both; irregular punched-out ulcers of mucosa, or both it and the submucosa; cæcum and ascending colon oftenest affected, and next to them the rectum. In one case there was a follicular ulcer of the ileum near the valve.

The cellular elements of adenoid tissue were increased in number; tubular glands compressed and in places filled with a dense mass of leucocytes. Submucosa thickened, infiltrated with leucocytes collected in irregular masses which often obscured the muscularis; blood vessels but little engorged. Muscular coat, some leucocytes, more especially in the circular coat. No change in the serous coat. Solitary follicles enlarged, cells notably increased and surrounded by leucocytes. Much brownish and blackish pigment in adenoid tissue. Ulcers of solitary follicles varied in degree; in some the cellular structure broke down near the mucosa, involving the apex of the follicle. In a later stage the ulcer had undermined; the mucosa and submucosa were infiltrated with leucocytes; the ulcer never penetrated beyond the circular muscle; tubular glands sometimes fused with the follicles, forming cysts. Leucocytes and fixed tissue cells found in margins of ulcers and around blood vessels; fatty degeneration at junction of mucosa and submucosa. Number of leucocytes proportioned to depth of ulcer. If the circular coat was involved, the floor of the ulcer was irregular and composed of broken-down muscle fibers and leucocytes; the serous coat then was thickened. Besides the follicular ulcers there were also ulcers of the mucosa which destroyed the tubular glands more or less, and sometimes penetrated to the muscular coat; the edges of the ulcers and the submucosa were infiltrated with dense masses of leucocytes.

In three cases the pseudo-diphtheritic process had begun and the colon and rectum were a dirty greenish gray color with red patches; many areas covered with pseudo-membrane under which were small follicular ulcers; the exudate was very thin and very tenacious.

The pseudo-diphtheritic form was more common among the patients; an acute process on a chronic one. Prognosis grave. Essentially a coagulation necrosis; the necrosed tissue sloughing off and leaving superficial ulcers which did not penetrate to the circular coat. The necrosis was caused by pressure of the mass of leucocytes and of the pseudo-membrane assisted by the bactericidal poisons. Stools usually dirty brown, sometimes dark brown and almost black from the pressure of blood; sometimes watery and exceedingly offensive; numerous red blood cells and pus cells, many of the latter having amœboid movements; but little mucous and that not glairy but more like pus; bacteria in immense numbers, cocci, spirilli, and bacilli, the latter preponderating; the same slender bacillus as was found in the follicular form; in three cases the cercomonas; shreds, strings, and pieces of pseudomembrane of a dirty gray yellow or greenish color; also portions of mucosa, dirty gray yellow or greenish, in which glandular tissue could be microscopically made out; leucocytes were usually numerous; and clumps of granular material (detritus).

The morbid anatomy in the pseudo-diphtheritic form: The small intestine was leaden gray or very pale; its coats thin, though less so than in the follicular form. Large intestine grayish or greenish blue, with red or dusky brown spots; coats thickened, caliber narrowed; in two cases almost cartilaginous. The mucosa was a dirty greenish gray or dirty white, sometimes areas of bright red of acute inflammation; and was thickened, with dusky reddish folds. The ulcers did not penetrate beyond its submucosa; edges sloping; color between ulcers pale flesh color with patches of dirty gray or greenish exudate; shape generally round or oval, the latter the more common; sometimes communicated with each other by passages under the mucosa; there were often small ulcer cavities in the mucosa; sometimes the mucosa was elevated in places by accumulations of thin, glairy, nearly colorless fluid in the mucosa. Pseudo-membrane sometimes bright yellow, usually in irregular patches; sloughing in places in the form of patches, strings or shreds, the shreds giving the membrane a shaggy appearance; exudate usually tough and tenacious and most common in rectum and just below ileocolic valve. The small intestine showed patches of acute inflammation with areas of atrophy; hyperæmia of summits of folds; no ulcers. Stomach chronically inflamed, with atrophy and areas of congestion and pigmentation.

Microscopic appearances in pseudo-diphtheritic form: Columnar epithelium absent; adenoid tissue between tubular glands infiltrated with dense masses of leucocytes, and the glands invaded and pushed apart, the leucocytes extended in severer cases into submucosa; small ulcers beneath mucosa often not involving the submucosa; small cavities in mucosa surrounded by leucocytes; tubular glands inclosed by leucocytes; necrosis of the covering layer of the adenoid tissue and the leucocytes combined caused the ulcer, which had sloping or rounded edges and a smooth floor, densely infiltrated with leucocytes. Submucosa in neighborhood of ulcer had a vast swarm of leucocytes and connective tissue cells; blood vessels dilated and engorged. The slough was composed of degenerated leucocytes and granular detritus. The pseudo-membrane was a fibrillated, granular material, inclosing numerous leucocytes, blood cells, and immense numbers of bacteria; there was an increase of interglandular tissue and infiltration with leucocytes; in more advanced cases leucocytes were found in the submucosa; capillaries engorged, and there were many capillary hemorrhages in mucosa and submucosa; most noticeable before ulceration occurred. Leucocytes very numerous around solitary glands, which finally disappeared, replaced by dense masses of leucocytes; muscularis mucosæ also disappeared; increase of fibrous material in submucosa; circular muscle usually infiltrated with leucocytes and connective tissue cells. Pseudomembrane often thick and nearly homogeneous, without distinct fibrillation or cell structures, sometimes as thick as the mucosa and submucosa combined.

Dr. Craig considers the gangrenous form as an intense degree of the pseudo-diphtheritic. The mucosa and submucosa were gangrenous with streaks of greenish pus and had a horrible odor. The process supervened on the other forms. Death occurred from pyæmia, with metastatic abscesses. The stools were thin and slimy; color slate, brown, and black; odor very offensive; contained blood cells, greenish pus cells, and bacteria in immense numbers; large pieces of mucous membrane with glandular structure and dense infiltration of leucocytes; sometimes only granular detritus.

The intestines were matted together and easily torn. Large intestine greenish black with irregular areas of deep black corresponding to the gangrenous areas; coats generally thin and fragile. Small intestine reddish brown with areas of bile-stained tissue and many areas of pigmentation; coats very thin, easily ruptured; in two cases partly gangrenous, covered with necrosed tissue and pus, and with regular ulcers penetrating to muscular coat. Stomach grayish blue, with many areas of pigmentation in wall and acute inflammation. Internally the mucous membrane of the large intestine was reddish brown or greenish yellow or bluish; in rectum and sigmoid flexure greenish black streaked with yellowish green pus; near ileocolic valve dusky red with greenish and brownish areas, where gangrene had advanced more rapidly; surface of rectum and sigmoid covered with thick yellow-green pus and showed deep irregular ulcers with undermining edges, covered with shreds of tissue stained with blood and pus. Mucosa, submucosa, and muscular coat destroyed in large areas; in places, especially in rectum and around ileocolic valve, the mucosa and submucosa were greenish black, pultaceous, blood-stained, with an exudate of yellowish green pus and swollen areas from which on section there exuded pus and semitransparent glairy gelatinous fluid. Where the gangrene was most intense there were no distinct ulcers; in transverse colon were many ulcers varying in size and shape, some oval, transversely directed, edges undermined, penetrating to circular coat. There were also large irregular ulcers, with swollen, undermined, or sloping edges, covered with large sloughs; very few follicular ulcers. Where the gangrene had not involved there were many superficial ulcers of the mucosa; coats thickened.

Microscopic examination of rectum showed a mass of leucocytes, red blood cells, granular detritus, and broken-down muscular tissue; mucosa, submucosa, and circular muscle destroyed; small portions of mucosa and submucosa preserved in places and infiltrated with leucocytes, red cells, and fatty detritus. The mucosa in the situation of the ulcers was covered with pseudomembrane, consisting of leucocytes, fibrillated material, tubular glands, and adenoid tissue, infiltrated with leucocytes, red cells, and granular detritus. The ulcers were irregular in shape, undermined, and penetrated to muscular coat;

floor irregularly elevated, the elevations composed of fibrillated material in which were many leucocytes and blood cells. Submucosa showed leucocytes and many hemorrhages; muscularis mucosæ destroyed; muscular coats much thinned, with areas of leucocytes; infiltration especially numerous near ulcers; cyst-like cavities full of leucocytes between muscle fibres.

The complications found post-mortem were similar in the three forms, except that metastatic abscesses were found only in the gangrenous form.

Under the head of bacteriology, he reports that since October 4, 1899 (five and one-half months), he had made over 200 microscopical examinations of fæces in cases of dysentery, and had found the amœba coli in but 3 cases; he had not found amœbic abscesses of liver at all, and had failed to find the amœba in the intestinal mucosa, in scrapings from intestinal ulcerations or in sections of the intestine itself, stained with thionin or methylene blue. He, however, isolated a bacillus identical with that found by Dr. Flexner, in Manila, previously described by Shiga, and which was pathogenic to small animals. Isolated by plate method from scrapings of the floor and edges of intestinal ulcers in 2 cases of pseudo-diphtheritic dysentery. The bacillus was practically identical with the bacillus typhosus. He had not succeeded in staining any flagella. It agglutinated with the blood of the cases from which it was isolated, and also with the blood of a few other cases of dysentery, but not of all, suggesting the possibility of the agglutinating power being lost or that there were different varieties of dysentery in the hospital. He experimented on 4 guinea pigs, in one of which a diarrhea developed; the pig died two weeks afterwards. Acute inflammation, but no ulceration, of the entire intestinal tract was found. The organism was recovered from the spleen and intestinal contents.

Bacteria were always found in the intestinal coats. The number was less in the follicular form and seldom present at all in the muscular coat. They entered apparently by way of the lymphatics; were found in and between the tubular glands, no one species preponderating. They were numerous around the ulcers, mainly the micrococci. In the pseudo-diptheritic form, immense numbers of bacteria were found in the false membrane and in the mucosa, the micrococci preponderating; the same was also true for the walls of the ulcers and in the submucosa. In the gangrenous form bacteria were in immense numbers in its sloughs and diseased mucosa, submucosa, and muscular coat beneath the ulcers. In places, in all the forms, they were so numerous that they stained en masse, the separate organisms being indistinguishable. They were also abundant around hemorrhagic areas. Generally speaking, bacilli and micrococci were found in nearly equal proportion in all forms of dysentery, in the superficial part of the mucosa; but in the deeper layers the micrococci were more numerous than the bacilli.

Maj. A. C. Girard, surgeon, United States Army, commanding the General Hospital, Presidio of San Francisco, Cal., submitted the following tabulation showing the dispositions recorded in 484 admissions, January 1 to June 30, 1900, from the Philippines, with diagnoses of tropical bowel affections:

| | Number. | Per cent. |
|---|---|---|
| Duty within 15 days from date of arrival | 78 | 16.12 |
| Duty within 30 days from date of arrival | 97 | 20.04 |
| Duty within 60 days from date of arrival | 122 | 25.21 |
| Duty after 60 days from date of arrival | 68 | 14.05 |
| Discharged within 30 days after arrival | 5 | 1.03 |
| Discharged within 60 days after arrival | 22 | 4.55 |
| Discharged after 60 days after arrival | 15 | 3.10 |
| Died within 30 days after arrival | 9 | 1.86 |
| Died within 60 days after arrival | 2 | .41 |
| Transferred | 5 | 1.03 |
| Remaining | 61 | 12.60 |
| Total | 484 | 100.00 |

The medical officers who had the care of these cases are generally of the opinion that the earlier a patient affected with tropical dysentery is transferred to the United States for treatment the greater is the likelihood of a speedy and lasting recovery. When a case becomes subacute or chronic instead of resulting in perfect recovery at the end of two or three weeks, it is believed that the chance of eventual recovery will be greatly improved by an early transfer to the United States. Besides this, it seems advisable to retain in service in this country men who have recovered from an attack of tropical dysentery, for reports from medical officers serving in the Islands show that a return to duty in the Tropics frequently means a recurrence of the disease.

The following is the report made by Drs. Strong and Musgrave on the etiology of dysentery:

### PRELIMINARY NOTE REGARDING THE ETIOLOGY OF THE DYSENTERIES OF MANILA, BY LIEUT. RICHARD P. STRONG, ASSISTANT SURGEON, UNITED STATES ARMY, DIRECTOR OF THE ARMY MEDICAL LABORATORY, AND W. E. MUSGRAVE, M. D., HOSPITAL STEWARD, UNITED STATES ARMY, RESIDENT PATHOLOGIST TO THE FIRST RESERVE HOSPITAL, MANILA, P. I.

During the past ten months there have been 9,063 cases admitted to this hospital (First Reserve military hospital) for treatment. Among this number the hospital clinical records show 1,328 cases with a diagnosis of dysentery. Of these dysenteric cases 125 died, a mortality of 9.4 per cent. These figures, however, do not represent the actual mortality among them, for 339 cases of dysentery were transferred to the United States and 283 were sent to other hospitals. Only 581 were returned from here to military duty. Of those that were invalided to America a number died (for most of these cases were sent home because there was little hope of their recovery in this country), and of the number sent to other hospitals, as we know, also a proportion died, but we have no record of the death rate among these cases in either instance cited.

All these figures show, then, is that the number of dysenteric cases that have died here is not below 94 per 1,000 dysenteric cases.

The following table shows the statistics compiled from the hospital clinical records:

[Cases treated in hospital, 9,063; percentage of dysenteric cases to admissions, 14.64.]

| Treated in hospital. | Total number. | Transferred to the United States. | Transferred to other hospitals. | Returned to duty. | Died. | Mortality. | Average number of days sick. | Percentage of admissions returned to duty. |
|---|---|---|---|---|---|---|---|---|
| Dysentery cases | 1,328 | 339 | 283 | 581 | 125 | 9.4 | 24 | 43.7 |
| Acute specific dysentery cases | 712 | 144 | 116 | 398 | 54 | 7.58 | 15 | 55.8 |
| Subacute specific dysentery cases | 55 | 4 | 4 | 45 | 2 | 3.6 | 19 | 81.8 |
| Amœbic dysentery cases | 561 | 191 | 163 | 138 | 69 | 12.3 | 35 | 24.6 |

In a hospital of this size, often crowded to 1,300 beds, when the staff was necessarily much overworked at times, perhaps in many cases where hasty or insufficient examinations (both clinical and of the stools) were made, the type of the disease was not accurately diagnosed or recognized. At any rate, when we turn to our necropsy records we find, at least among the fatal cases, our statistics in regard to the variety of the disease somewhat different. The cases from the hospital clinical records, therefore, are not made the subject of our report, but are omitted. Only those cases are included which the writers have either studied clinically or at necropsy also, when the opportunity presented itself.

Our records show, of 271 necropsies, 111 cases of dysentery. Of these 111 cases, classified primarily entirely upon anatomical changes found at necropsy, and not from clinical symptons, there have been 21 cases of acute specific dysentery, 11 cases of subacute dysentery, and 79 cases of amœbic dysentery.

The following table gives a summary of our necropsies:

[Necropsies, 271.]

| | Total number. | Average number of days sick. | Bacillus dysenteriæ obtained at necropsy. | Bacillus dysenteriæ not tried for. | Motile amœbæ dysenteriæ found at necropsy. |
|---|---|---|---|---|---|
| Dysentery, all cases | 111 | ............ | 19 | 56 | 68 |
| Acute specific dysentery | 21 | 8 | 18 | 1 | ............ |
| Subacute specific dysentery | 11 | 20 | 2 | 2 | ............ |
| Chronic dysentery | 79 | ............ | ............ | 53 | 68 |

It is not our purpose to define here just what we mean by these three anatomical types of dysentery. They will be referred to later. As a result of our investigations we believe that we have been able to recognize in the cases of dysentery from in and about Manila and in those from several more remote towns at least two distinct types of dysentery (viz, an acute specific dysentery and an amœbic dysentery), with two distinct etiological factors. The subacute type we regard only as a later picture of the acute stage of the specific dysentery and as having the same etiological factor. These two types, as stated, were classified primarily entirely according to the anatomical changes found at necropsy; yet when the type of each case, determined at necropsy, is compared with its corresponding clinical history—although from the symptoms alone these cases may often be (as we shall see) at first difficult to differentiate and classify—they may still be easily separated from one another during life, the one being recognized by its specific blood serum reaction and the other by the presence of amœbæ dysenteriæ in the stools; and, moreover, when we study more carefully their courses we may see that the clinical cycle of the disease, as well as the onset, is generally somewhat different in each type.

It is the principal object of this paper to determine by an analysis of our cases in how far our impressions may be justified and to compare our results with those of the numerous observers in other countries.

Let us first turn our attention to a summary of the different micro-organisms described in dysentery before considering further these two types of dysentery.[1]

### HISTORY OF THE MICRO-ORGANISMS DESCRIBED IN DYSENTERY.

As early as 1883 Prior (Centralblat f. klinsche Medecin. 1883, p. 273) described micrococci singly and in clumps in the stools, in the mucous secretion of the intestine, and in the mucous tissues themselves in dysentery. The bacillus subtilis he also found, but in small numbers, in the stools, and not in the mucous secretion of the intestine or lying in the tissues.

In 1886 Hlava (Casop. lék cesk *v.* Praze, 1887, p. 70) believed dysentery to be a disease caused by micro-organisms. He studied dysentery bacteriologically and succeeded in isolating 19 different organisms from the intestinal canal of patients suffering from this disease. He finally became convinced that no specific organism was to be regarded as the cause of dysentery, and he was unable to produce dysentery or anything resembling it in animals with the organisms he found. Therefore he concluded that bacteria are not the cause of dysentery.

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[1] We fear that our literature is far from complete; we have as yet no large medical library in Manila for reference.

Klebs in his book (Die allg. Path. v. 1, Jena, 1887, p. 206) describes an organism which he states he believes to be the cause of dysentery. This organism is a small bacillus which forms small whitish dot-shaped colonies on gelatin. No spore formation could be observed. In stab cultures in gelatin they neither liquefy nor grow into the depth of the media. This organism was isolated from the intestinal glands of dysenteric cases, but was never found in the intestines of those suffering from other diseases. Inoculation experiments in dogs and rabbits gave no positive results.

Ziegler (Path. Anatomie, Jena, 1892) considers at least some of the epidemic forms of dysentery due to bacterial infection, and he thinks that certain epidemics have been so intimately associated with bacterial invasion of the intestine that the causal connection of the micro-organisms with the disease can hardly be doubted. In a local outbreak occuring in Germany he observed a small bacillus partly scattered, partly occurring in masses within the glands, glandular epithelium and connective tissue of the large intestine. Their multiplication in the tissue was followed by inflammation, tissue necrosis, and degeneration.

Chantemesse and Widal (Acad. de Med., 1888) found in the walls of the large intestine and in the mesenteric glands and spleen of a man who died of dysentery, and in the stools of five persons suffering from tropical dysentery, a bacillus which they consider specific and probably the cause of dysentery. This organism they described as a short rod with rounded ends, which does not stain well, and has but slight motility. On agar plate cultures the colonies appear first as small white specks, which often assume a yellow color, but in a few days the yellow color vanishes, causing the colonies to become white and granular. Under a low power of the microscope these colonies have often a darker center and a lighter, sharply circumscribed, periphery. Gelatin cultures show no liquefaction of the media. This bacillus was found when injected in pure cultures into guinea pigs, either by the mouth or directly into the large intestine, to give rise to a diphtheritic-like inflammation of the mucous membrane of the large intestine. It is supposed by some observers, however (Baumgarten, Kartulis, and others), that this organism was only a variety of the bacillus coli communis which had acquired special virulence.

Veillon and Jayle (Semaine méd., Par., 1891, p. 13) found in liver abscesses and in the intestines of those sick with dysentery the bacillus coli communis.

Maggiora (Archiv. Ital. de Biologie t. xvi, 1891) studied an epidemic of dysentery in which only three deaths occurred out of 2,001 cases. The duration of the disease was from six to twelve days. He examined the fæces microscopically in 20 cases and only found the amæba in 1. In 11 cases he examined the stools bacteriologically. The bacteriological examinations showed the bacillus coli communis always present in great numbers, and in most of the cases the proteus vulgaris was also present, but not in great numbers; in 6 cases the bacillus fluorescens liquefaciens was found; in 2 staphylococcus pyogenes aureus was found; in 1 staphylococcus pyogenes albus; in 5, bacillus pyocyaneus in small numbers. The colon bacillus and bacillus pyocyaneus were found to be very virulent. Maggiora inclines to the belief that perhaps bacillus coli communis developed an abnormal virulence and caused the above epidemic.

Grigorieff (Mikro-organismen in dysenterie centralblat. f. Bakteriologie xii, 1892) found in the fæces of 10 dysenteric cases, as well as in the organs of those who had died from dysentery, a particular bacillus in every case examined, and he believes this bacillus to be identical with the one described by Chantemesse and Widal. On gelatin plate cultures the colonies magnified under a low power appear as bright, somewhat seed-like, pale yellow disks. The superficial colonies are larger than those at a lower level. These disks gradually expand, and after five days concentrated rings are formed. Stab cultures in gelatin show after twenty-four hours a somewhat broad, furrowed, gray band, somewhat resembling a goose feather (Gansefederfahne), with no liquefaction of the media. Upon agar slants there appears after twenty-four hours a light grayish-white layer, externally thinner than internally. Upon potato there appears after forty-eight hours a thick, grayish-yellow growth, with a glistening surface. The bacilli decolorize by Gram's method. Various experiments with animals were always unsuccessful.

Ogata (Centralblat. f. Baktr., 1892) studied an epidemic of dysentery occurring in the province of Oita, in Japan, and found no amœbæ in the stools of the cases examined. In the fresh discharges of 15 cases he succeeded in isolating from 11 of the 15, as well as from the ulcers of a case which had died of dysentery, short, fine bacilli, measuring about 1 $\mu$ in length, with rounded ends and active movement. This organism did not decolorize by Gram's method. In agar cultures greenish-yellow colonies were formed. In gelatin cultures the media was liquefied. When introduced into guinea pigs by os or rectum they caused ulcerative processes in the large intestine. Ogata thinks that this organism, discovered by him, is probably the cause of the dysentery in Japan. He also found, according to his report, in the discharges from the large intestine of all of the 15 cases examined, as well as from the ulcers in the large intestine, short bacilli, which do not liquefy gelatin, decolorize by Gram's method, and which were not pathogenic for the animals experimented upon.

Zancarol (Dysentérie et abces du foie, Progrès médical, Alexandrie, 1893) believed that both dysentery and liver abscess have the same etiological factor, both being produced by a streptococcus. In the blood of 8 persons suffering from liver abscess he found streptococci, and in 6 liver abscess cases out of 9 he found streptococci either microscopically or in cultures. In one case staphylococci were isolated, and on another occasion he could not determine whether staphylococci or streptococci were present. He concluded, therefore, that both dysentery and liver abscesses are due to streptococci.

Laveran (Compt.-rend. Soc. de biol., Par., 1893, p. 875), in a study of a limited dysenteric epidemic in Paris, examined 10 cases and only found the amœba in one. In all of the 10 cases examined he found a bacillus in great numbers which could not be regarded as entirely distinct from bacillus coli communis. He believes that at this stage of our knowledge it is impossible to form a definite judgment of the etiology of dysentery in Europe.

Calmette (Archives de méd. nav., Sept., 1893), who studied the epidemic disease at Saigon, came to the conclusion that of all the bacteria present in the stools the bacillus pyocyaneus was the one of greatest pathogenetic importance, and the only one in his opinion capable of reproducing in animals the lesions of dysentery. The pathogenic effects of this organism are, however, he states, increased by the presence of streptococci. He attaches little importance to the amœba as the cause of the disease.

Vivaldo (Riforma med., 1894, No. 138), during the epidemic in Padua, examined the stools in 20 cases of dysentery, but never found the bacillus described by Ogata as the cause of dysentery. He believes that the amœbæ have a specific action in preparing the ground for the action of the micro-organisms.

Arnaud (Compt.-rend. Soc. de biol., Par., 1894, p. 239) examined 60 cases of dysentery in tropical climates and concluded that bacillus coli communis, or a pathogenic variety resembling it biologically very much, was to be regarded as the cause of dysentery. The more severe the termination of the disease the more frequently was this bacillus found in pure cultures and the greater was its virulence. Five dogs inoculated by way of the rectum showed characteristic ulceration of the large intestine.

Bertrand and Baucher (Gaz. hebd., Oct. 6, 1893, and Apr. 4, 1894) studied an epidemic of dysentery among the troops stationed at Cherbourg. They found a number of bacteria present in the dysenteric discharges examined, viz, a septic anaërobic vibrio, bacillus coli communis and another organism which seemed to be a variety of it, bacillus pyocyaneus, bacillus fluorescens, staphylococcus pyogenes aureus, albus and citreus, two varieties of streptococci and bacillus œdematis maligni. They concluded that no one of the micro-organisms found by them can be considered as the specific agent of the disease, but they ascribe to the bacillus pyocyaneus the most important part in the causation of the dysentery. Their observations lose considerable in value from the want of evidence as to the presence and deposition of the organism in the tissues. In the fæces from patients with the chronic dysentery of tropical climates they further found practically the same organisms as they met with in the acute disease in France, but they conclude that in the tropical form the bacillus coli communis, more or less modified, predominated.

Silvestri (Gior. d. r. Accad. di med. di Tôrino, 3, xlvii, 1894), in studying an epidemic of dysentery in Turin, found in the bacteriological examinations he made of a number of the stools a large diplococcus. This organism when injected in pure cultures into the rectum of dogs and cats caused severe catarrh of the intestine. The process was more marked in the cats.

Kruse and Pasquale (Untersuchungen über Dysenterie und Leberabscess, Zeitschr. f. Hygiene Bd. 16, Heft 1, 1894), in discussing the bacteria found in association with amœbæ in dysentery, state that in 100 cultures from fresh dysenteric stools and the contents of liver abscesses and (post-mortem) from several organs, there were found streptococci of various species in 50 per cent, typhoid-like bacilli in 25 per cent, the bacillus pyocyaneus, a bacillus resembling the pseudo-diphtheritic bacillus, and the staphylococcus pyogenes. None of these organisms were present so constantly or in such numbers as to suggest a specific relation to the dysenteric lesions. Post-mortem the bacteria were always most numerous in the blood from the portal vein. Inoculation experiments into the rectum of cats with these organisms gave a negative result. The authors do not conclude that the organisms found in association with the amœba possess no pathogenic properties whatever, but rather that they can not be regarded as the primary agents in this form of dysentery.

Chaltin (Centralbl. f. innere Med. Aug., 11, 1894), in an investigation of dysentery, found that as a rule the dejections from these cases contained the bacterium coli commune and proteus vulgaris. He failed to find the amoeba in all of 325 cases examined by him, and concluded that these organisms are of no particular significance in temperate climates.

Celli and Fiocca (Annali dell' Istituto d' igiene sperimentale di Roma, 1895) made some preliminary communications about their study of dysentery. They obtained their material from sporadic cases observed in Rome, Tivoli, and Siena, and from epidemics that occurred in Bellino and Forli. They also studied cases of dysentery from Alexandria, Egypt. In all, they studied 62 cases. They concluded that amœbæ, especially the amœba coli, are not to be regarded as a direct cause of this disease. They injected dysenteric stools free from amœbæ into cats by the rectum and produced dysentery. They conclude that dysentery is caused by a specific variety of the bacillus coli communis, which they state is always present in the stools of dysenteric patients. The organism bacillus coli communis, which is generally nonpathogenic, they state, can acquire, under certain circumstances, very virulent properties; that in the bowels it is often associated with a bacillus like that of typhoid, as well as with a streptococcus, and they assert that, introduced into animals by the mouth or injected into the rectum, either singly or all of these organisms, but particularly, however, when in combination, excite dysentery. They consider bacterium coli dysenteriæ to be but a variety of bacterium coli commune, a variety that, being acted upon by other bacteria, assumes a most virulent character. During this process the almost harmless bacillus is converted into the most virulent bacterium of dysentery. The latter organism then secretes a powerful toxin that is capable of producing typical dysentery when given through mouth or rectum or injected subcutaneously into the connective tissue of animals. This dysenteric toxin may be precipitated by alcohol from bouillon cultures, and is soluble in water.

The next year Celli (Ann. d' ig. sper., Roma, 1896, p. 203) published more extensive communications. He invariably succeeded in isolating B. coli dysenteriæ from dysenteric cases. He considers that dysenteric infection is primarily caused by a toxin produced by this organism. This toxin, he states, may have a pyogenic, dysenteric, or marantic effect, and is to be found in the blood of marantic, dysenteric men and animals. With gradually increasing doses of this toxin animals may be given a high degree of resistance against the marantic or dysenteric, but not against the pyogenic action. This immunity is of short duration, however. The intestinal ulcers he states to be due to the pyogenic bacteria of the intestinal canal.

Bruno Galli Valiero (Centralbl. f. Bact., Jena, 1896, v. 20, p. 901) in the same year reported upon the etiology and serum therapy of dysentery. In one case of dysentery in Valterina he isolated an organism which measures 1.75$\mu$, 2.6$\mu$, or so short (0.87$\mu$) that they resembled cocci. Plate cultures showed colonies which in a few days became of a greenish tinge. Gelatin cultures were slowly liquefied and milk in forty-eight hours was peptonized. Milk sugar was fermented, but the indol reaction could never be obtained in cultures of bouillon. The organism was not decolorized by Gram. Experimental dysentery was produced in chickens and dogs by inoculation. The serum of a dog immunized with this bacillus can protect guinea pigs and chickens against infection from it. Valiero believes that this bacillus, which he isolated, is identical with bacillus coli dysenteriæ of Celli, and is nothing more than a variety of bacillus coli.

Pottein, in 1897, isolated from the stools of a severe case of dysentery, in addition to the bacillus coli communis, a micro-organism which he calls the streptothrix dysenterica. The bacillus coli communis isolated possessed only moderate virulence. He concludes that in all probability the streptothrix dysenterica was the original irritating cause of the dysentery in at least this one case, and that he hopes it may be encountered again in other cases of dysentery.

In 1898 K. Shiga (Centralblatt f. Bakt., Parasitenkunde und Infektionskrankheiten, xxiv. Band, 1898), working in Kitasato's laboratory in Tokyo, described a bacillus in connection with the epidemic form of dysentery occurring in Japan. He studied 36 cases and obtained a specific organism in 34. He reasoned that when the serum of a person suffering or having suffered from a certain disease has an agglutinating action upon a certain form of bacteria this organism has probably an intimate connection with that disease. Using this argument as an aid in his work, he isolated a bacillus which he believes to be the only organism of dysentery, at least of the kind prevalent in Japan. This organism he names the bacillus dysenteriæ. The blood serum in all of the 34 cases of dysentery examined showed a positive agglutination for this organism. He describes the bacillus as a short rod with rounded ends, much resembling bacillus typhosus or the greater portion of the coli group. It is possessed with moderate motility, but flagella have not yet been demonstrated; neither has spore formation been observed. The organism decolorizes by Gram's stain.

Upon gelatin plates at room temperature there appear, after a few days, small round dots, which magnified under low power are slightly yellow and finely granular. After a few days they increase in size; the middle portion of the colonies then appears, under a low power, darker, while the outer zone appears brighter and more seed-like. The superficial and deeper colonies show no marked variation. In stab cultures of gelatin a whitish strand forms the whole length of the stab. The gelatin is not liquefied.

Single colonies upon slanted agar appear, after twenty-four hours in the incubator, moist, bluish, and partially translucent. After two days they present a combination of a middle dark and a peripheral bright, sharply defined zone.

The growth on glycerin agar is slightly more abundant than on ordinary agar. The organism grows on blood serum without liquefying it.

In the stab cultures of glucose agar there is formed along the whole line of the puncture a thick gray-white strand without the development of gas. Upon potatoes, after twenty-four hours in the incubator, there is hardly any perceptible growth, only the surface appears slightly shiny. After two days this changes to a yellow-brown. In the course of a week the growth is heavier and of a deeper brown color. Bouillon cultures show, after a day in the incubator, a somewhat intense cloudiness, with a moderate precipitate. No pellicle is formed on the surface. No indol reaction is present.

Litmus milk, after twenty-four hours in the incubator, appears reddish; otherwise, however, it undergoes no change. The milk never coagulates.

This bacillus was pathogenic for mice, rabbits, and guinea pigs when injected subcutaneously. Pure cultures injected into the abdominal cavity of a guinea pig caused death from general peritonitis, with hemorrhages in the intestinal wall and bloody mucus in the intestinal contents. In rabbits whole agar cultures introduced by way of stomach or rectum produced only temporary loss of weight.

We quote in detail the following experiments on cats and dogs:

1. A young cat was injected subcutaneously with one-half of an agar culture. Result: Weakness, loss of appetite, death within four days. At necropsy plate cultures showed bacillus of dysentery from the point of inoculation, blood, spleen, and liver. Intestines normal.

2. A young cat was given an enema of weak ammonia water. Result, slimy stools. The following day the stools were examined and found free from bacillus of dysentery. A large quantity of dysenteric fæces was injected by way of the rectum. More slimy stools resulted, but bacillus of dysentery was not found. Death within three weeks. Intestines found normal.

3. Two cats (480 and 700 grams) were fed one-half a drop of croton oil in their food. Result, soft stools the next morning. No dysenteric bacilli found. The second cat was given a whole agar culture of bacillus of dysentery into the stomach. The first cat recovered from diarrhea the next day, while the second had slimy and gray stools. The diarrhea lasted a whole week; stools examined and bacillus dysenteriæ constantly obtained in culture. Death in four weeks. Loss of weight, 510 grams. Necropsy: Mucous membrane hyperæmically inflamed. From cæcum to rectum the whole bowel filled with mucus, or fæces covered with mucus. Bacillus dysenteriæ obtained from the cæcum and large intestine.

Cat fed with large quantity of bacillus dysenteriæ; no results.

It will be seen, then, that in only one cat which had been given croton oil previously was any pathological change in the intestine produced.

Shiga first satisfied himself that bacillus dysenteriæ did not exist in the stools of a small dog. He then introduced a whole agar culture of bacillus dysenteriæ into the stomach by means of a probe. Results: Next day the animal passed grey stools of soft consistency; bacillus dysenteriæ was present in abundance. On the third day the animal refused food; a yellowish watery diarrhea with vomiting occurred. On the morning of the fifth day, death. Dissection: Upper part of small intestine 50 cm. long filled with mucus. Intestinal wall showed several circumscribed hemorrhages, the largest about 1 cm. in diameter. The large intestine mucous membrane was loosened up and covered with mucus. The rectum was relatively healthy and the other organs showed no change. From the mucus of the small intestine pure cultures of bacillus dysenteriæ were obtained. Cultures from the blood and other organs were sterile.

In conclusion of his experiments on animals Shiga states that whether he used dysenteric dejections or pure cultures of bacillus dysenteriæ he could not produce similar changes of the intestines as in human dysentery. The most favorable results were, he states, when he obtained hyperæmia and hemorrhages in the intestinal mucous membrane in guinea pigs (through intraperitoneal injections of pure cultures) and in dogs and cats by the injection of pure cultures by way of the stomach.

A small portion of a bouillon culture in which the organisms had been killed when injected into Shiga's arm caused rather violent local and especially general reaction as in severe cases of dysentery. His own blood serum showed agglutination for this bacillus in dilutions of 1 to 10 ten days after the inoculation.

Shiga lays stress upon the stage of the disease in which the organism occurs in greatest numbers in the stools; this being at the most violent period, clinically, of the dysentery. He states that pure cultures of the organism may then be obtained direct from the bloody mucous stools, besides a few colonies of colon bacilli, streptococci, and diplococci. When the stools become pus-like and then of ordinary feculent consistency the other bacteria constantly increase in numbers while the dysentery bacilli gradually diminish. From the dysenteric stools he obtained pure cultures of over ten varieties of bacteria, but with the exception of the bacillus of dysentery, none appeared constantly and none of these other organisms showed any constant agglutination with the blood serum of dysenteric patients. He never found this organism in the stools of healthy patients or in those suffering from other diseases (typhoid fever, 4 cases; acute diarrhea, 2 cases, and chronic diarrhea, 3 cases). In a case of beri-beri also this bacillus was absent. He studied 3 cases of dysentery at necropsy, and obtained from 2 this same organism from the intestine and also from the retroperitoneal glands. In both cases the bacillus coli communis was also obtained from the glands, and bacillus coli and other bacteria from the intestine. It is unfortunate that there is no detailed description of the anatomical lesions found at the necropsies, that the lesions might be recognized.

In 11 cases this organism gave negative results for agglutination with the blood serum of healthy individuals. The serum of 3 cases of typhoid fever, of 1 case of acute and of 2 cases of chronic gastric catarrh, and also of a case of beri-beri, all failed to agglutinate this organism. The serum of the calf, goat, rabbit, mouse, cat, guinea pig, chicken, and pigeon also failed to agglutinate it.

Shiga also describes 2 varieties of colon bacilli that were occasionally found in dysenteric stools, which sometimes showed agglutination with dysenteric serum as well as with the serum from normal cases. He found amœbæ in 5 of the 34 cases he examined and he thinks it is very probable that the balance of the cases also contained amœbæ.

Thus, when we review this literature we see that in the more recent work on the bacteriology of dysentery, in addition to Shiga, Kruse and Pasquale and Celli all found typhoid-like bacilli in the stools of dysenteric patients; while Ogata found, in addition to the organisms which he supposed to be the cause of the dysentery studied, an organism which he describes as a short bacillus, which does not liquefy gelatin and decolorizes by Gram's solution. This organism was found in the discharges of every case studied. When injected into animals it did not produce dysenteric changes.

Celli stated that his typhoid-like bacillus, as well as his streptococcus and bacillus coli were all capable of producing dysentery either singly or in combination. Kruse and Pasquale found typhoid-like bacilli in 25 per cent—that is, in 25 out of 100 examinations—and the question immediately suggests itself to us, Were all of these 100 cases of the same type of dysentery? We know from Kruse and Pasquale's report that a number of these cases were amœbic cases; but were they all of this type, and whether in these 25 cases in which typhoid-like bacilli were obtained there was not a difference in the anatomical picture at necropsy and some difference in the clinical histories in these cases from those of the remaining 75? At any rate, when we turn to our own dysenteric cases we find that we have obtained typhoid-like bacilli from the large intestine or contents thereof in 28 cases. When we come, however, to study the cases in which we have found these typhoid-like bacilli at necropsy we see that in not one of them were amœbæ found, and that the anatomical picture at necropsy, and often the clinical histories, were quite different in these cases from 97 other cases in which amœbæ were found post-mortem.

Let us now describe in detail this typhoid-like bacillus which we have found and the cases in which we have encountered it.

*Morphology.*—Bacilli with rounded ends which differ in morphology in various culture media. On agar cultures they generally appear as short rods with rounded ends measuring 1 to 3 $\mu$ in length and about 0.4 to 0.5 $\mu$ broad, occurring not frequently in pairs. In twenty-four-hour bouillon cultures the rods are always longer, often measuring 3 or 3.5 $\mu$ in length, occurring frequently in pairs; occasionally (particularly in old bouillon cultures or in fresh bouillon cultures made after many generations on artificial media) the rods may be seen even longer, and it is not infrequent then to observe filaments of several organisms. The organism possesses no capsule and does not form spores. No flagella have been demonstrated.

*Staining properties.*—They stain readily and evenly with ordinary aniline dyes and are easily decolorized by Gram's method, but not decolorized by alcohol except by prolonged treatment. Old bouillon cultures sometimes show slight irregularities in staining.

*Cultural characters.*—An ærobic and facultative anærobic very slightly motile bacillus. Spore formation has not been observed. It grows on the usual media both at room temperature and in the incubator.

On agar plate cultures, after twenty-four hours in the incubator, superficial and deep colonies develop. The surface colonies are round, of a distinctly bluish white tinge and delicate, measuring from about 0.5 to 1 mm. in diameter; under a low magnifying power these colonies are often nucleated, having a darker center with a gradually growing lighter periphery. They are granular with often a tendency toward central radiation of the granules. These colonies are generally round with even borders. The colonies in the depth are small, more yellowish in color, oval or round, and present nothing characteristic.

Often from the twenty-four-hour plate cultures made from the stools of acute dysenteric cases when the plates are held up to the light the colonies of dysenteric bacilli can be picked out from the colon colonies by their more delicate growth and by their bluish tinge. In older plate cultures the colon demonstrates that it is a heavier grower. From close observation of many plate cultures we have concluded that in twenty-four-hour plate cultures certain colonies of bacillus coli communis resemble the colonies of those of bacillus dysenteriæ so closely that they can not be told apart either by the naked eye or by a low magnifying power. On the other hand, colonies of the bacillus of dysentery never resemble certain common forms of colon colonies.

On agar slants with bacillus dysenteriæ a moderately heavy growth appears after twenty-four hours, bluish white by transmitted and whitish by reflected light. The growth is lighter than that of bacillus coli communis and sometimes even lighter than that of bacillus typhosis.

On glycerin agar the growth is about the same as on ordinary agar. In gelatin stick culture the organism grows along the track of the needle without liquefying the medium.

In glucose agar stick cultures there is never any production of gas. The growth occurs along the track of the needle and slightly on the surface about the point of inoculation of the medium.

Litmus milk is always slightly reddened after twenty-four hours. The red color does not change further and no other change occurs after one week.

Ordinary milk is neither coagulated nor peptonized, but appears unchanged, though the organism grows well in it.

Litmus lactose agar is apparently not changed after twenty-four hours. There is no gas formation.

In saccharose cultures there is no fermentation.

On fresh-potato cultures after twenty-four hours there is generally apparently no growth or only slight moisture about the track of inoculation; after three days there is a light straw-colored growth which gradually becomes heavier and a little darker by the end of a week. Cover slips show that the organism grows well on this medium.

In bouillon cultures there is moderate clouding of the medium in twenty-four hours, with the formation of a light precipitate. No pellicle on the surface ever occurs.

Dunham's solution is clouded in twenty-four hours with the formation of a slight sediment.

Neither in Dunham's solution nor in Smith's sugar-free bouillon is there any indol production.

The bacillus is pathogenic for mice, rats, and rabbits when injected either subcutaneously or intraperitoneally. White mice, when inoculated with one-half to 1 c. c. of a twenty-four-hour bouillon culture generally die within forty-eight hours, but may live three days. Post-mortem the organism may be obtained from the visceral organs, and from the heart's blood. When the same amount is injected intraperitoneally the animal dies generally in from ten to twenty-four hours. Post-mortem there is generally œdema of the abdominal walls and a little fibrin over the surfaces of the intestines. The organism may be obtained from the abdominal cavity, visceral organs, and heart's blood.

Manila gray rats when inoculated with one-half to 1 c. c. of a twenty-four-hour bouillon culture subcutaneously generally died on the third or fourth day. The organism may be obtained from the visceral organs, and sometimes from the heart's blood. When inoculated intraperitoneally with the same amount death takes place in from twenty-four to thirty-six hours. Post-mortem there is a little fibrin over the intestines. The organism may be obtained from the liver, and generally from the spleen and heart.

In rabbits subcutaneous inoculation of 1 c. c. of a twenty-four-hour bouillon culture generally causes death on the third day. At necropsy the vessels of the epicardium are injected; the vessels of the mesentery are also brightly injected; the gall bladder is swollen; there are small hemorrhages in the liver; the stomach and small intestine contain a small amount of mucus. The cæcum and large intestine are distended with apparently normal feces.

Intraperitoneal injection into rabbits causes death with a more marked peritonitis; otherwise the changes are the same as when the inoculation is made subcutaneously. The organism is found in greater numbers in the liver than elsewhere.

Four monkeys were fed for two weeks daily with a twenty-four-hour bouillon culture of bacillus dysenteriæ. Two of the monkeys were fed 10 grains of sodium bicarbonate previous to taking the bouillon culture. Three of the cases had at times a moderate diarrhea; at no time was there blood in their stools. Bacillus dysenteriæ was recovered from their stools. In the fourth case there appeared after about ten days' feeding a little mucus and blood in the stools for two days. Microscopical examination showed the trichomonas intestinalis, red blood cells and epithelial cells; no amœba nor bacillus dysenteriæ was obtained from the stools. The feeding was continued, but the stools became normal, and there was no further result.

Cats and dogs were injected per rectum with large amounts of fresh bloody mucus stools from acute dysenteric cases in which the bacillus dysenteriæ had been demonstrated. No dysentery was obtained and no change of note in the large intestine.

Cats were given enemas of bouillon cultures of bacillus dysenteriæ. Only slight diarrhea for a few days was produced. One cat was killed nine days after the injection. At necropsy there was no swelling of the mesenteric glands. On opening the large intestine the rugæ were seen well marked, the surface of the bowel bathed in a light layer of mucus. Microscopical examination showed only epithelium and epithelioid cells. There were no hemorrhages nor early ulcerations of the large bowel.

Subcutaneous injection of 1 c. c. into a Manila pony cause a rise of temperature in the neighborhood of 105° F. After a few days' illness the temperature decline to normal.

The virulence of the organism varies greatly in different cultures. The organism quickly loses its virulence when grown for any length of time on artificial media. Thus it will be seen that the disease acute specific dysentery can not be produced as such in animals any more than typhoid fever can.

We will now attempt to describe the type of dysentery which we have called acute specific dysentery.

### ACUTE SPECIFIC INFECTIOUS DYSENTERY.

An acute infectious disease characterized anatomically by an extensive superficial necrosis of the mucosa, and by hyperplasia and hemorrhagic infiltration of the lymph follicles of the large intestine, with induration and thickening of its walls; by hemorrhagic swelling of the adjacent mesocolic glands; and often by parenchymatous changes in the other organs. The bacillus dysenteriæ is present in the acute stage of the disease, both in the discharges and in the superficial necrotic layer of the intestinal mucosa. Clinically the disease is marked by an acute onset, by very frequent mucous bloody stools, accompanied by intense tenesmus, and by an abrupt termination either in death (usually in from four to fifteen days), or by a gradual improvement, from which an early recovery takes place, or the disease may apparently pass into a subacute stage.

*Etiology.*—The disease seems widely spread over the Island of Luzon, but has occurred particularly among our troops in certain districts. The cases often appear in groups. It is not the rule to find sporadic cases. In one regiment in which in the neighborhood of twenty cases of typhoid fever occurred within a short space of time, there were almost twice that number of acute specific dysentery cases within the same space of time, as verified by the clinical histories and by the blood serum reaction. It is not possible for us to say just now if the disease is spreading to any great extent. The conditions under which our troops are living are very different from what they were last year, the troops all practically being in garrison now. The disease appears to occur more frequently toward the end of the rainy season. Thus in the latter part of July and in August and September, 1899, there were more cases which came to necropsy with this type of the disease than in the remaining nine months of the year together.

*Infection.*—Infection probably occurs, generally, through the drinking water. Milk is a possible means of infection, but not a practicable one here, owing to the scarcity of cows' milk in the Philippines and to the little use of other fresh milk as food. Infection through uncooked food (salads, cresses, etc.) can not be excluded. Undoubtedly infection is markedly influenced (as in cholera) by the existence of catarrhal troubles, irritating food, bad food, constipation, starvation, physical exhaustion, exposure to wet, etc. Infection with malarial plasmodia can hardly be considered an important predisposing factor, for it occurred in only two of our acute and in only one of our subacute cases.

*The bacillus dysenteriæ.*—The researches of Shiga have shown that a bacillus similar to, if not identical with, the one we have described above is probably the cause of a certain form of acute dysentery in Japan. Our own researches seem to show that this organism is probably the etiological factor in the acute specific form of dysentery which occurs here, and which we are attempting to describe. We have isolated this bacillus from 28 cases of dysentery. Nineteen of these cases came to necropsy, and all showed similar lesions of the large intestine, to be described below. This bacillus was isolated in 17 of our 21 necropsies on acute dysenteric cases. In our first acute case it was not sought for; in the remaining two it was not found. In our subacute cases it was obtained twice out of 11 necropsies. In two cases it was unfortunately not looked for. In the other seven it was not found. We shall refer again to the difficulty in finding the bacillus in the later stages of the disease.

The organism has been sought for in normal stools in the contents of the large intestines of those dying from other diseases than dysentery and in the fæces of monkeys and rabbits, but has never been encountered on any of these occasions. In 26 cases of dysentery which presented post-mortem an entirely different anatomical picture of the large intestine, and in all of which amœbæ dysenteriæ were present, this bacillus was carefully sought for and never found. Lastly, the disease has been produced in man on one occasion by inoculation with this organism.

*Serum reaction.*—The blood serum of the acute and subacute cases shows usually a marked agglutinative reaction for this bacillus. The reaction may be present as early as the third day, and is usually marked by the fifth or sixth. In one grave acute case which died on the fourth day of the disease, there was no reaction with the serum, either ante or post mortem, with this organism. The reaction may persist for several months, but usually seems to disappear in a shorter time. In one case of our series it persisted for six months, but has since disappeared.

*General description.*—The period of incubation probably lasts not over forty-eight hours. In one case to be referred to later, in which a pure culture of the organism was swallowed, symptoms of the dysentery began to appear after twenty-four hours. The onset of the disease is usually abrupt, there being no prodromal symptoms generally. Often a patient goes to bed feeling perfectly well. During the night he is suddenly attacked with dysentery, and it is not infrequent for these cases to have from 20 to 40 stools during the night. The stools at first contain a small amount of mucus. This mucus rapidly increases in amount, however, and soon becomes blood streaked. Generally within forty-eight hours, or a shorter time, the stools consist of nothing but reddish, bloody mucus. Microscopically these discharges consist in the later stages of many red blood cells, leucocytes, epithelial cells, and large epithelioid cells. No amœbæ are present in unmixed infections. The movements increase in frequency until finally there appears to be no control whatever over the sphincter ani, and the patient is almost continually on the bed pan or pad. The straining and tenesmus are often excessive. Toward the end the movements become less frequent, and may cease altogether shortly before death. Extensive hemorrhages are very unusual, but occasionally occur, always mixed, however, with more or less mucus. Excessive thirst is usually a prominent symptom. The tongue is generally coated with a whitish fur.

*Fever.*—The temperature is very irregular and variable, though almost always there is some pyrexia present. It may often reach 103° or 104° F. or it may not rise above 102° F. Just before death the temperature may rise rapidly or it may fall as rapidly to a subnormal point. The latter is always a very unfavorable sign.

The blood changes are not constant. There may be a moderate leucocytosis, but in the rapidly fatal cases often the number of leucocytes is not increased. The red blood cells in the first forty-eight hours are often increased in number, doubtless due to the early loss of water through the bowel; but shortly after the appearance of blood in the stools, notwithstanding this concentration of the blood, the blood count from the corresponding loss of red cells may fall below 4,000,000 to the cubic millimeter. Differential counts show that when a leucocytosis occurs it is the polymorphonuclear variety of white cells which is increased in number.

*Pulse.*—The pulse in the early stages of the disease is in the neighborhood of 100. As the disease progresses, particularly in unfavorable cases, the pulse becomes very rapid and may reach 150 or more. The extremities become cold, and the patient generally dies in coma from cardiac exhaustion.

Cardiac complications are rare. Neither acute endocarditis nor pericarditis has occurred in any of the cases studied. In the grave cases the sounds early become rapid and feeble and running. They soon lose their normal rhythm and approach that of embryocardia.

Nausea and vomiting are also somewhat uncommon, but occasionally occur, particularly in the earlier stages of the disease. Acute gastritis was found to be present in one subacute case at necropsy. There is often abdominal tenderness, particularly about the region of the colon, on deep pressure. No particular part of the colon appears constantly more tender than the rest. The abdomen is generally not distended. The spleen is generally not enlarged.

*Respiratory system.*—Pulmonary complications have been occasionally present. Lobar pneumonia occurred in one subacute case, and broncho-pneumonia in three acute and one subacute case. Acute bronchitis and fibrino-purulent pleurisy have been found each once in two of the acute cases of dysentery.

*Nervous system.*—There is no complaint of intense headache. Delirium may occur toward the close, particularly in the prolonged fatal cases. Convulsions have not been noted in any case, nor has neuritis or paralysis heen observed as a sequel.

The urine is always decreased in amount, and may contain a small amount of albumin. Retention is often an early symptom. The diazo reaction does not occur.

Acute glomerular nephritis has been found post-mortem in one case.

In none of our cases has the liver been found much enlarged or tender. It is perhaps hardly necessary to mention that liver abscess has not been found in this form of dysentery.

Recovery from the most severe form is rare; in those cases which recover, the loss of weight may be very marked; a loss in the neighborhood of 20 or 30 pounds may occur within two weeks. The patients, after the acute form, are generally left in a weakened state. After convalescence has been established, they do not seem to suffer from dyspeptic or intestinal troubles. One attack does not necessarily protect, for one of our cases writes to us from a distance that he has had an attack similar to his first, which was a severe one and studied clinically by us. The second attack occurred five months after the first. Convalescence had been long established between the two. The most violent stage of the disease rarely lasts a week, though patients have lived for ten days in this stage. We have referred before to the fact that the cycle of this type is different from that of the amœbic type of dysentery. In the former it is brief; thus of our 21 acute cases which came to necropsy, 4 died on the fourth and 4 on the fifth day of the disease. None of our cases died before three complete days of illness. Ten others died before the fifteenth day. In those cases which recover, the urgency of the symptoms gradually diminishes, the stools gradually lessen, and the temperature declines. Recovery then may be early and convalescence well established by the end of the second week, or the disease may sometimes become subacute and last for months. One of our cases died on the sixty-fourth day of the disease. We regret that we have not as yet studied clinically this subacute stage as carefully as we should wish. These patients are usually poorly nourished, and have thin, bloody mucous stools from time to time—often not over from 3 to 5 in twenty-four hours. These stools in unmixed infections do not contain amœbæ. The blood serum of these cases shows a well-marked agglutinative reaction with the bacillus dysenteriæ, and sometimes an agglutinative reaction with certain colon bacilli, particularly for varieties of colon which show feeble power to ferment sugars, and which only faintly redden litmus milk without coagulating it, and which perhaps should be more correctly referred to as para-colon bacilli. These subacute cases, with their serum reactions, will be more fully described in a later paper.

*Association with other diseases.*—In 2 cases of the acute form of this dysentery there has been concurrent infection with malarial fever—on one occasion with the æstivo-autumnal type, and on the other with a single tertian infection. One subacute case was associated with a single tertian infection also. In another subacute case at necropsy there was a pigmented malarial spleen, but no parasites were present. In none of the other cases were malarial parasites found. So much has been said about malaria as an exciting agent in dysentery that we take occasion to emphasize the fact that it did not play an important part as a predisposing factor in our cases in this form of dysentery.

### MORBID ANATOMY.

*Abdominal cavity and intestines.*—On opening the abdominal cavity the intestines externally may appear at first sight almost healthy. In a large majority of cases, however, the mesenteric vessels of the large intestine near the bowel are injected. The lymph glands lying close along the upper end of the rectum and the sigmoid flexure, which are normally hardly visible or palpable, are swollen to the size of from 10 to 15 mm. in their long diameter, are generally bright red, and on cut section hemorrhagic. No areas of necrosis are visible. The other lymphatic glands extending along the large intestine may throughout show these same swollen hemorrhagic changes, or they may along the transverse and ascending colon show only considerable hyperæmia. The group running toward the head of the pancreas seems particularly likely to be involved. The other mesenteric lymphatics are often only moderately swollen, and sometimes show slight hyperæmia. We have not noticed either any constant marked distention or contraction of different portions of the large intestine.

The serous surfaces of the large bowel are generally injected. The serous surfaces of the small intestine may be moderately injected or appear almost normal. The submucous and muscular coats of the large intestine are œdematous and swollen. The blood vessels of the submucosa are injected and in places diffuse hemorrhages have occurred in their regions.

On opening the intestines the whole of the large intestine is seen to be involved from the cæcum to the anus. Occasionally the process extends for 10 or 15 cm. into the lower end of the ileum. In regard to the starting point of the infection, we can not say, from the pathological changes post-mortem, in what part of the intestine the morbid process probably begins. The process seems a little more acute along the lower part of the descending colon and the sigmoid flexure, judging from the fact that the glands of the lymphatic chain which lie close to the bowel are generally more hemorrhagic than the other lymphatic glands of the large intestine.

In no text-book at hand can we find a description of this form of acute specific dysentery as we see it here. In the most acute cases (death after three or four days' illness) the mucous membrane of the large intestine presents in general a reddened, swollen, puffy appearance. There is a superficial necrotic mucous layer which generally extends over the mucosa throughout the large bowel, and sometimes for a distance of 10 or 12 cm. into the ileum. This necrotic layer consists of mucus, redblood corpuscles, leucocytes, epithelial cells, many large swollen epithelioid cells, and bacteria. No amœbæ are found. If one brushes the mucous layer lightly aside with the finger the bright-red injected appearance of the intestinal wall becomes more plainly visible. Dotted here and there throughout are small, diffuse, bright-red hemorrhages, with irregular margins measuring 2 to 4 mm. in diameter, or even more. The solitary follicles are generally swollen and raised, and of a bright-red color. Here and there scattered among them bright-red, sharply circumscribed small purpuric spots may appear. Occasionally the background of the intestine may be described as though covered with a bright-red eruption, but with darker red hemorrhagic points scattered over this background. In the acute cases no definite ulceration takes place, but only a superficial general necrosis of the mucosa.

*Small intestine.*—As has been stated, the serous surfaces may be moderately injected or appear almost normal. On opening the small intestine the mucous surface throughout may be normal, or more commonly the mucosa in the lower portion of the ileum is more or less reddened. In about one-third of the cases (7 of the 21 acute), however, the lower 10 or 15 cm. of the ileum is extensively involved. When this is so this portion of the intestine presents in general the same reddened hemorrhagic appearance and is covered with a necrotic mucous layer as in the large bowel. There is not the œdema and thickening of the intestinal walls here, however, as observed in the large intestine. The Peyer's patches are only moderately or not at all swollen; the solitary follicles may be swollen (measuring 1 or 2 mm. in diameter), raised, and hemorrhagic. The process gradually fades until usually about 15 or 20 cm. above the valve the mucosa appears normal. The process is never so well marked in the lower end of the ileum as in the large intestine. In only one case was there found a sticky, fresh, fibrinous peritonitis, with fine filaments of fibrin, particularly over the sigmoid flexure and upper part of the rectum.

The other organs show no constant changes.

*Spleen.*—The spleen is generally not enlarged and shows no constant pathological change. It was moderately swollen in 5 acute and in 2 subacute cases. In 4 of these 7 the enlargement was probably due to the coexisting malarial infection.

*Liver.*—The liver is not generally either hyperæmic or swollen. In only 1 case was it congested, and in another case slightly enlarged. In 2 cases there were small superficial hemorrhages beneath the capsule.

In no case has liver abscess been present. In those cases which live for more than a few days the liver shows parenchymatous changes. In the subacute stage it may show early fatty degeneration.

*Kidneys.*—The kidneys often show injection of the surface vessels and cloudy swelling. Acute glomerular nephritis was present in the 1 subacute case. The dysentery was associated with chronic interstitial nephritis in another single subacute case.

*Stomach.*—Acute gastritis was present in only 1 subacute case. The heart muscle showed parenchymatous changes in 3 acute and in 1 subacute case.

*Respiratory system.*—Lobar pneumonia was present in 1 subacute case. Broncho pneumonia was present in 3 acute and in 1 subacute case. Table III shows the more common changes in all the dysenteric necropsies.

### TABLE III.

[Total number of necropsies, 271.]

| Necropsies. | Total number. | Liver abscesses. | Acute general peritonitis following perforation of intestines. | Typhoid fever. | Malarial fever. | Pigmented malarial spleen. | Acute gastric catarrh. | Chronic gastric catarrh. | Lobar pneumonia. | Broncho pneumonia. |
|---|---|---|---|---|---|---|---|---|---|---|
| Dysentery | 111 | 14 | 13 | 3 | 6 | 6 | 3 | 8 | 2 | 9 |
| Acute specific dysentery | 21 | ...... | ...... | ...... | 2 | ...... | ...... | 2 | ...... | 3 |
| Subacute specific dysentery | 11 | ...... | ...... | ...... | 1 | 1 | 1 | 1 | 1 | 1 |
| Amœbic dysentery | 79 | 14 | 13 | 3 | 3 | 5 | 2 | 5 | 1 | 5 |

| Necropsies. | Acute pleurisy. | Chronic adhesive pleurisy. | Congestion and œdema of the lungs. | Acute nephritis. | Chronic nephritis. | Cloudy liver. | Cloudy kidneys. | Fatty liver. | Fatty kidneys. | Cirrhosis of liver. | Enlarged spleen. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dysentery | 3 | 25 | 16 | 2 | 7 | 36 | 21 | 26 | 7 | 5 | 15 |
| Acute specific dysentery | 1 | ...... | 4 | ...... | ...... | 8 | 5 | 1 | 1 | ...... | 5 |
| Subacute specific dysentery | ...... | 7 | 1 | 1 | ...... | 7 | 4 | 3 | 3 | ...... | 2 |
| Amœbic dysentery | 2 | 18 | 11 | 1 | 7 | 21 | 12 | 22 | 3 | 5 | 8 |

As has been stated, the bacillus dysenteriæ may be obtained from the superficial necrotic layer overlying the large intestine, from the superficial layers of the mucosa itself, and exceptionally (in 2 cases) from the hemorrhagic mesocolic glands.[1] The organism has not been found elsewhere in the body.

In the subacute form the mucosa of the large intestine has lost its bright-red look. The solitary follicles are more swollen, sometimes measuring as much as 5 or 6 mm. in diameter, are raised, hemorrhagic, and of a dark-red color. Irregular dark hemorrhages may be seen in their neighborhood. The surface of the bowel is very uneven, due apparently to the irregular thickening of the mucosa. The mucosa may take on a marked mammillated appearance. The necrotic layer of mucus is much less profuse than in the acute stage of the disease. There are still no definite ulcers, but there are superficial erosions. Indeed, we have never seen anything in this form similar to the ulcerations present in our dysenteric cases in which the amœba dysenteriæ has been found present. There is not the same thickening of the intestinal walls seen in the acute cases. The submucosa and muscular coats seem to have lost some of their œdema. The lower end of the ileum was extensively involved in 4 of the 11 cases. In 1 of these the process extended for a distance of 85 cm. into the small intestine above the ileo-cœcal valve. In 3 other cases the mucosa of the lower end of the ileum showed only hyperæmia.

The parenchymatous changes in the organs are more marked than in the acute form. Fatty degeneration of the liver and kidneys were present in 3 of the cases.

PATHOLOGICAL HISTOLOGY.—*Large intestine.*—Sections of the large intestine show overlying the mucous membrane a necrotic layer of mucus, degenerating epithelial cells, a few large swollen epithelioid cells, red-blood corpuscles, and leucocytes. The whole stains poorly; many cells are granular and have lost their nuclei; as one approaches the bases of the glands of Lieberkuhn the cells stain more deeply. Always bacilli and not infrequently cocci are present in this layer. The number of red blood corpuscles varies greatly with the time of the disease. In the most acute cases they may greatly overnumber the white corpuscles and epithelial cells. The surface epithelium of the glands has been destroyed; in some cases where the process is most severe the epithelium may be necrotic almost to the base of the glands. The mucous membrane or what is left of it is swollen, its capillaries are distended, and there are small extravasations of red blood cells in their regions. The mucosa shows extensive cellular infiltration and there are many leucocytes in both the inter and sub glandular tissues. The bacilli in the mucosa lie scattered or collected within the glands or between them or sometimes within the cells of the glands. When they are found aggregated there are often collections of leucocytes about them. Some of the cells in their neighborhood are granular and their nuclei stain poorly. Sections which are cut through a follicle show the follicle swollen, with often small hemorrhages into its substance; large epithelioid cells are sometimes present in the adjacent lymph channels; these are then often multinuclear; bacilli may be present in the follicles, when both circumfollicular and interfollicular infiltration may occur. In the mucosa we sometimes find in addition to bacilli dysenteriæ a fair number of cocci. These latter, however, are generally in the more superficial layers of the mucous membrane when present.

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[1] Since writing the above the organism has been obtained in cover slips and in pure cultures from the lymphatic glands of a third case of the acute type.

At the base of the glands of Lieberkuhn in the areolar tissue and muscularis mucosæ there are usually more extensive hemorrhages and a marked infiltration with round cells. Also in the upper portion (from within) of the submucosa there are extensive hemorrhages. In the lower portion of the submucosa the vessels are injected, but the hemorrhages not large or frequent. Where the thickening of the intestinal wall is more marked the hemorrhages and cellular infiltrations in the submucosa are more extensive. Often the tisues of the submucosa appear very œdematous. Sometimes there is an apparent increase in the number of the plasma cells in the upper portion of the submucosa when the infiltration seems most marked. Even in the muscular coats the œdema may sometimes be present, and in very severe cases infiltration may occur. The vessels of the peritoneal coat are injected, but there are generally no large hemorrhages. The bacilli may be found sometimes not only in the mucosa, but all through the areolar tissue, muscularis mucosæ, and submucosa down to the muscular coat. In their neighborhood when they lie in masses there is infiltration, and often the nuclei of the cells about them stain poorly and are granular.

*The lymphatic glands.*—Sections of the swollen hemorrhagic glands show the blood vessels greatly distended, and there are often extensive hemorrhages through the gland substance. The lymph spaces are frequently distended and contain albumin and a little fibrin; there may be many large epithelioid cells with proliferating and multiple, often crescent-shape, nuclei. Desquamation of the cells along the lymph channels may occur. The lymph follicles are proliferating and show an increase in the number of small round cells; often there are small hemorrhages present in the follicles. Only occasionally one sees a poorly staining and granular cell. In the surrounding tissues about the glands the blood vessels are distended. In only one case do the sections of the lymph glands show bacilli. (In the other case in which the bacillus was obtained by cultures from the glands, through some mistake no glands were saved for microscopical study.) In these glands small areas of necrosis have occurred. In these areas granular material is present; the nuclei stain poorly, but no nuclear fragmentation is apparent about the organisms. There is only moderate infiltration about these areas.

*The liver.*—Sections of the liver tissue show the liver cell often swollen and containing fine granules; the normal structure of many of the cells is lost. No areas of necrosis or of infiltration occur.

*The kidneys.*—Usually the vessels are injected, the tubules sometimes filled with red blood corpuscles. In the glomerular spaces it is not uncommon to find a little albumin with extravasation of red blood corpuscles. The cells of the tubules are generally swollen and granular.

*The spleen.*—Shows no definite changes with the exception that the pulp usually contains more red blood corpuscles than normally. The more detailed description of the microscopical pathology will follow later.

SERUM REACTIONS.—In 246 cases of diarrhea and dysentery, without regard to type, the blood serum was examined for agglutination with bacilli dysenteriæ. Of this number 71 cases had a positive agglutinative reaction with this organism in dilutions of 1 to 10 in twenty minutes.

In 192 of the 246 cases the stools were examined microscopically with the following results: In 56 the amœba dysenteriæ was found, often with the trichomonas intestinalis; in 4 the amœba coli; in 29 cases either the trichomonas intestinalis or the cercomonas hominis or both were present; in one case each the balancidium coli, the rhabditis embryos of the strongyloides intestinalis, ova of the anchylostoma duodenale, and ova of the trichocephalus dispar were found.

In 54 cases the stools were unfortunately not examined. This happened chiefly because the blood in these cases was often obtained from other hospitals at a distance. Many of them were undoubtedly amœbic cases. In 33 cases the serum showed no agglutinative reaction with bacilli dysenteriæ, nor were parasites found in the stools. Of these 33, 1 was a case of sprue previously seen by Manson, 3 turned out to be typhoid fever cases, and 2 gave positive serum reactions with bacillus coli communis. A small number of these 33 were probably amœbic cases, as sometimes it was impossible to make more than one examination of the stools among them.

All of the 71 cases of this group of cases which gave a positive agglutinative reaction with bacilli dysenteriæ either gave a recent clinical history or were suffering at the time from an acute dysentery. In many the dysentery was severe and ended fatally. In fact, in 21 of these cases bacillus dysenteriæ was sought for and obtained from the stools.

In only 3 of the cases with positive serum reactions for bacillus dysenteriæ were amœbæ found in the stools. In 2 others the trichomonas intestinalis was found, but no amœbæ. Of the cases which gave the serum reaction and contained amœbæ in the stools the first was undoubtedly suffering from amœbic dysentery at the time, but he gave the following history twelve days previously: "The attack came on suddenly; three other companions were taken sick with dysentery at the same time; all were drinking the same water and eating the same food at Pasig. The first twenty-four hours his bowels moved all night; he sat at the sink off and on for two days. He complained of swimming in his head and had bloody mucous stools. He entered this hospital twelve days later, stating that his dysentery was much improved." Numerous motile amœbæ, many containing red blood corpuscles, were found in his yellow mucous stools. Bacillus dysenteriæ was sought for but not found. The blood serum showed a distinct positive agglutinative reaction for bacillus dysenteriæ. He improved and disappeared from the hospital. In this case it does not seem clear just when the infection with amœba took place.

In the second amœbic case which gave an agglutinative reaction with bacillus dysenteriæ, the following clinical history of dysentery was obtained: "Perfectly well all his life until six months ago, when he was taken sick with diarrhea, which lasted for a week or so at a time, when he would get it stopped, but it would begin again in a short time. This intermittent diarrhea continued until a short time ago, when it became more severe, and he noticed that he was passing considerable blood; his stools became more frequent—10 to 15 in twenty-four hours—with more tenesmus and with headache and fever. He entered the hospital shortly after." The first twenty-four hours after entrance he had 20 stools, the second 26, and the third 16 stools. His temperature registered for two days 101° F., and then gradually dropped to normal. There was a leucocytosis on the second day of 10,000. The mucous stools showed many red corpuscles, epithelial cells, motile amœbæ, some containing red blood corpuscles and bacteria. The blood serum reaction (1 to 10 in fifteen minutes) with bacillus dysenteriæ was repeatedly obtained. Bacillus dysenteriæ was not sought for in the stools. The blood serum showed no agglutinative action with a colon bacillus obtained from his stools.

The third case which gave both a positive blood serum reaction with bacillus dysenteriæ, and had also amœbæ present in the stools, gave the following history of dysentery: "Three months ago he had a severe attack of acute dysentery with very frequent bloody stools containing mucus; this attack lasted about seventeen days; he gradually grew better and the blood began to disappear, but he states that he never has been free of diarrhea or dysentery since. About a month after his first attack of dysentery he had another severe acute attack; this lasted about eight days; he again passed large quantities of blood and mucus and states he had chills and fever at the same time. He has been passing blood and mucus off and on ever since." He entered the hospital here for his chronic dysentery and for cramps in his bowels. Since entrance he has had never more than 5 stools in twenty-four hours. Examination of the yellowish pea soup like stools shows large numbers of the trichomonas intestinalis, a fair number of motile amœbæ, a few containing red blood cells, a few red blood corpuscles and leucocytes. The blood serum shows a moderate but distinct agglutinative reaction for bacillus dysenteriæ, but none for the bacillus coli communis. The blood examination shows a few crescentic malarial parasites. The amœbic infection here occurred perhaps after the first acute attack of dysentery.

We regard these 3 cases as double infections with bacillus dysenteriæ and with amœba dysenteriæ.

In the first 120 cases of the 246 (in which there were 15 positive agglutinative reactions with bacilli dysenteriæ) the blood serum was also tried for agglutinative reaction with bacillus typhosis; with only 3 were there positive results. In the first of these cases the patient had typhoid fever four months before, and in the second case the patient had typhoid fever the previous year; in the third case we do not know whether there was any history of typhoid or not; we are endeavoring to trace the patient and obtain this information. In 46 cases in which the blood serum gave a positive reaction for bacillus dysenteriæ, the blood was examined for malarial parasites. They were found present in 9 cases. There were 4 tertian and 5 æstivo-autumnal infections. It will be seen again that malaria is apparently not a predisposing factor of importance in this form of dysentery.

The blood serum was also tried in 100 cases other than dysentery for agglutination with bacillus dysenteriæ, with the following results:

| Disease. | Number of cases. | Previous hist. dysent. | Dilution. | Time. | Result. |
|---|---|---|---|---|---|
| | | *Cases.* | | *Minutes.* | |
| Health | 12 | 1 | 1:10 | 30 | 1 partial.<br>11 negative. |
| Malaria | 17 | .......... | 1:10 | 30 | Negative. |
| Typhoid | 20 | .......... | 1:10 | 30 | Do. |
| Surgical | 17 | 1 | 1:10 | 30 | 1 positive.<br>16 negative. |
| Venereal | 4 | .......... | 1:10 | 30 | Negative. |
| Rheumatism | 6 | .......... | 1:10 | 30 | Do. |
| Tuberculosis | 3 | .......... | 1:10 | 30 | Do. |
| Paraplegia | 1 | .......... | 1:10 | 30 | Do. |
| Abscess | 3 | .......... | 1:10 | 30 | Do. |
| Acute mania | 2 | .......... | 1:10 | 30 | Do. |
| Constipation | 1 | .......... | 1:10 | 30 | Do. |
| Diarrhea | 7 | .......... | 1:10 | 30 | Do. |
| Bronchitis | 2 | .......... | 1:10 | 30 | Do. |
| Dengue | 4 | .......... | 1:10 | 30 | Do. |
| Sprue | 1 | .......... | 1:10 | 30 | Do. |
| Total | 100 | 2 | 1:10 | 30 | (1) |

[1] 1 positive, 1 partial, 98 negative.

Of these 100 cases, 1 gave a positive and 1 a partial reaction with bacillus dysenteriæ. The case that gave a complete reaction had never had typhoid fever. In 1895 he had severe dysentery in India, lasting about six months, and was unconscious during the first part of the attack. In 1898 he had a second attack of severe dysentery in South Africa; this attack lasted three weeks. At present he has no dysentery and has not had any for more than a year. The blood examination is negative for malarial parasites. The blood serum shows no agglutinative reaction for bacillus coli or for bacillus typhosis.

The case which gave a partial reaction for bacillus dysenteriæ (tried three times) gave also a negative reaction for bacillus typhosis and for bacillus coli. This patient gives a history of "an acute attack of dysentery one year ago which lasted about ten days. He passed much blood and mucus then and had many stools." He has had no bowel trouble since.

The dilutions of blood serum used may be considered rather low for the time limit, but these 100 reactions seem to show that the agglutination does not occur with ordinary blood serum in these dilutions.

In 97 of the cases the blood serum was tried for agglutination with bacillus coli communis or varieties of it (paracolon bacilli). Twelve of these gave a positive reaction in dilutions of 1 to 10 in twenty minutes. In 3 of these cases the blood serum also gave a positive agglutinative reaction with bacillus dysenteriæ; they were all clinically regarded as subacute cases of dysentery. In the 11 other cases in which the positive reaction for colon bacilli was obtained, 2 were cases in which there was clinically subacute dysentery, but no serum reaction for bacillus dysenteriæ and no parasites in the stools; 2 were cases of amœbic dysentery, and 5 were cases of a history of dysentery but with no dysentery at the time, and with the trichomonas intestinalis only in their stools. None of these last 11 cases, it is understood, gave a positive reaction with bacillus dysenteriæ.

So far we have not obtained the bacillus dysenteriæ from the intestine or from the stools in an amœbic case of dysentery; however, it has only been sought for in 26 cases as yet. We must remember, though, that the acute specific dysentery runs a rapid course, that cases either die quickly or get better rather quickly. And we have already pointed out that it may be very difficult, nay, we should say often impossible, to obtain bacillus dysenteriæ in any but the most acute stage of the disease. This only adds therefore to our chances of not finding it in amœbic cases and explains perhaps why we do not more often meet with double infections. Undoubtedly cases of these double infections with amœba dysenteriæ and bacillus dysenteriæ occur, as are evidenced by the 3 cases reported above in which the blood serum reacted positively to bacillus dysenteriæ and in which amœbæ dysenteriæ were found in the stools. But to find the bacillus dysenteriæ in an undoubted amœbic case we have not been fortunate enough to do. We can not speculate upon the anatomical picture the large bowel would present at necropsy, for it is somewhat doubtful if bacillus dysenteriæ would attack an already diseased, thickened bowel, which we often see in amœbic cases, in the same manner it would a more normal mucosa. We do not doubt that these cases of double infection occur, however, and we shall hope still to meet with one. As has been stated, we have examined only 26 cases. The cases in which amœbæ dysenteriæ have been found in the stools and the blood serum gives a positive agglutinative reaction for the bacillus dysenteriæ are to be regarded as double infections, just as we have infections with other bacteria and parasitic diseases at the same time (for example, infection with the amœba dysenteriæ and bacillus typhosis, of which we have had 3 cases, and we know from Cunningham's work that in some cholera cases both the comma bacillus and amœba coli occur in the large intestine together). We do not believe that the two are to be taken as part of the same infection. The two parasites produce quite distinct lesions. The bacillus dysenteriæ produces its changes rapidly and has an acute cycle; the amœba dysenteriæ produces its lesions slowly usually, and death comes generally only after prolonged infection with this parasite.

In 56 amœbic dysentery cases in which amœbæ dysenteriæ were found in the stools, in only 3 cases was there a positive serum reaction with bacillus dysenteriæ. The two diseases, amœbic and acute specific dysentery, have a very distinct and different etiology.

*Preliminary note.*—We spoke in the beginning about the clinical cycle of amœbic dysentery being somewhat different from that of our acute specific dysentery. Thus in amœbic dysentery we often have an irregular course marked by periods of intermission and exacerbation of the diarrhea with a tendency to chronicity and the frequent occurrence of abscess of the liver. A gradual onset is characteristic of most of the cases, although the onset may occasionally be abrupt.

The periods of exacerbation and intermission of the diarrhea are characteristic of this form of dysentery. Are we not justified, then, in saying that the clinical cycle of the two forms of dysentery is generally different? Only a few days ago a patient was admitted who stated that he had been troubled with dysentery only for a week, and not before that time. He died the next day. Motile amœbæ were found in the stools before death and in the lesions of the large intestines post-mortem. There existed most extensive ulceration of the large bowel. Some of the ulcers were already healing. The process must have existed for a month or two at least, yet there was no other history than of a moderate dysentery of a week.

*The amœbic cases.*—Seventy-nine of our necropsies on dysenteric cases presented the lesions of amœbic dysentery. Almost every variation of the disease was observed. In general, many showed extensive thickening of the large bowel with numerous soft, deeply undermined, ragged-edged ulcers, often somewhat raised above the surrounding mucosa from infiltration of the underlying submucosa. The bases of these dissecting ulcers were formed of mucosa, submucosa, muscular tissue, or peritoneum. Other cases showed ulcers with only slightly undermined edges with smoother borders and clean bases. In many, both healing and fresh lesions were observed. The bowel wall was generally either bluish red or slaty gray. General peritonitis following perforation of the large bowel was present in 12 of the series. We can not attempt to describe these lesions of this type of the disease here. They have been carefully and fully described by Councilman and Lafleur (the Johns Hopkins Hospital Reports, Vol. II, 1891), Kruse and Pascale ("Untersuchungen uber dysenterie und leberabscess," Zeitschr. f. Hygiene, Bd. 16, Heft 1, 1894), Harris (American Journal of the Medical Sciences, 1898), and others. Anyone who reads their descriptions must clearly see that the anatomical picture we have attempted to describe, as found in our acute and subacute cases, is entirely a different one from the picture of amœbic dysentery. Their descriptions answer well for the pictures we have found in our amœbic cases and we have nothing to add to them.

In 68 of our 79 cases motile amœbæ were found in the lesions of the large intestines. (We emphasize the fact that the amœbæ were motile in these 68 cases; in other cases when the examination could not be made soon after death sometimes bodies resembling amœbæ, but not motile, were found. Swollen epithelioid cells, as is well known, often closely resemble amœbæ. Without movement it is sometimes very difficult to distinguish them from one another.) Fourteen of these cases showed, in addition to the lesions of the large bowel, liver abscesses, in which amœbæ were found in all but 2. In 1 the examination could not be made for nine hours after death. In 21 the lower end of the ileum was reddened. In 4 cases there were typhoid ulcers. In only 3 cases could the dysenteric process be said to be present. Then there were no ulcerations, but reddening of the mucus and swelling of the solitary follicles.

We were not able to study in all of the amœbic cases the bacteriology of the large intestine. The routine work of the laboratory has at times been such as to render this impossible. In 26 of these amœbic cases, however, the bacteriology of the large intestine was carefully studied and the bacillus dysenteriæ sought for, but not found in one case.

The bacillus lactis aerogenes and several varieties of streptococci and staphlyococci were the only other organisms found oftener than occasionally. We may add here that in none of these 26 cases did the blood serum give an agglutinative reaction with bacillus dysenteriæ.

We shall not be surprised to find bacillus dysenteriæ in connection with an amœbic dysenteric case, for we believe, as we have stated, that such double infections occasionally do exist, as shown by our blood serum reactions. When this occurs, however, we shall hope to find, in addition to the lesions of amœbic dysentery, those of acute specific dysentery, of course greatly modified, as one might expect in a case of concurrent infection with bacillus dysenteriæ and amœba dysenteriæ.

In none of these 79 cases of amœbic dysentery did the picture resemble the acute or subacute stage of our specific dysentery.

Councilman and Lafleur (loc. cit.) first called attention to the fact that amœbic dysentery is an anatomically sharply characterized form of the disease. Amœbic dysentery, they write, "is a form of dysentery which etiologically, clinically, and anatomically should be regarded as a distinct disease." We can only add that our own work bears out this statement. Yet it is with great difficulty that this view has held ground, and at present there is still much opposition to it. Thus when we consult two of our recent well-known text-books we find in Allbutt's System of Medicine, Volume II, page 408, 1897, that amœbic dysentery is recognized as a separate type of the disease and is described in a different chapter, and we find the statement under dysentery as an endemic infection, "that such specific organisms do exist in dysentery can hardly be doubted by those who have witnessed dysentery in its epidemic or endemo-epidemic manifestations; but until their existence is demonstrated, they can not be used as a basis of classification." On the other hand, when we consult the Twentieth Century Practice of Medicine, volume 16, 1899, we find that Sodré states, "To admit a dichotomy in the morbid process to recognize the existence of an amœbic dysentery and another not amœbic, seems to me absolutely unacceptable. Dysentery is one and one only, whether it be considered from an etiological, clinical, or anatomical point of view. * * * It is always the same, whether observed in the tropics as endemic and with marked tendencies to become chronic or in temperate regions as sporadic or epidemic." We can not agree with this statement. There are many instances to show that there may be more than one variety of dysentery. One of the most striking examples, clinically, of this, it seems to us, occurred in Futuna. Davidson (Epidemic in Futuna, Hygiene and Diseases of Warm Climates, Edin., 1893, p. 997) states that in 1893 an epidemic of dysentery started in Futuna, one of the New Hebrides group, being introduced by a vessel from Sidney (1,400 miles distant) which landed a Futunese woman and child. The child was suffering from dysentery. The disease soon spread and carried off one-quarter of the population, chronic dysentery being endemic in this island before the epidemic started. Our own experience has shown us that certainly at least two distinct forms of dysentery exist here. Both have probably the same predisposing factors (namely, dyspeptic conditions, particularly those caused by the ingestion of bad or irritative food, overripe or unripe food, sudden changes of temperature, exposure to wet and cold, etc.), but the one is caused by infection with the bacillus dysenteriæ and the other by infection with the protozoon amœba dysenteriæ. Also, the amœbic form is the endemic form of dysentery here, and the cases occur throughout the year. The specific form is more likely to appear as epidemic, and particularly in the late summer or fall of the year. At the present time, however, the troops at Calamba are suffering from a severe epidemic of this latter form.

Since there has been so much controversy in regard to the amœba as the cause of dysentery, let us review briefly the literature in regard to this parasite. According to Sodré (loc. cit.) Lambl was the first to note the presence of amœbæ in the contents of the intestines. He observed them in 1859, in Prague, in the stools of a child affected with dysentery. Lewis and Cunningham (Quarterly Journal Microsc. Soc., Vol. XXI, 1881) found them in India in cholera stools and in other fæces. Loesch (Virchow's Archives 65), however, was the first to accurately describe them and give them the name of amœba coli. He found them in the stools of a case of human dysentery in Russia in large numbers, and was able by rectal injection of the fæcal material loaded with amœbæ to produce ulcerations in the large intestine of dogs. In these ulcers he found large numbers of amœbæ.

The presence of amœbæ in the stools in diseases of the large intestine was corroborated by Sonsino, Normand, Grassi, Leuckart, and others. Koch (Koch and Gaffky "Arbeiten auss dem Kaiserl" Gesundheitsamte) then showed in several cases of Egyptian dysentery that amœbæ were to be found in the floors of the ulcers of the large intestine as well as in liver abscesses occurring in connection with dysentery. The regularity of these results was proven later by Kartulis (Virchow's Archives, 105–118; Centralblatt. f. Bakter., 207), by Professor Osler (Johns Hopkins Hospital Bulletin, 1890), by Councilman and Lafleur (Johns Hopkins Hospital Reports, 1891), by Kruse and Pasquale (Zeitschr. f. Hygiene u. Infekt., 16, 1), Harris (American Jour. Med. Sciences, 1898), and by others, who found them in a great number of Egyptian and American dysentery cases as well as in liver abscesses associated with some of these. Councilman and Lafleur stated that the name "amœba coli" given to the parasite by Loesch was not distinctive, for it seemed to them very probable that there were a number of species of amœba, which under certain conditions and in certain localities might inhabit the colon. They, therefore, proposed the name "amœba dysenteriæ" for it. On the other hand Ogata (Centralblatte f. Bakt., 11) and Maggiora (Ibid., 11) failed to find amœbæ in numerous cases of Japanese dysentery. Laveran (Archive de Med., 1893), Calmette (Archiv. de Med. Nav., September, 1893), Gasser (Archiv. de Med. Experim. et d'Anat. Path., 1893), Bertrand and Baucher (Gaz. Hebd., 1893 and 1894), Chaltin (Centralblat. f. Innere Med., 1894), and others also often failed to find them. Schuberg (Centralblatt. f. Baktr., 13), concluded that the abundance of the amœba in dysentery was the effect and not the cause of the disease. The ulcerations he states "afford this dweller of the intestine more favorable conditions for development." Cassagrandi and Barbagallo (Riecerche Biolog. e Clin. sul ameba coli Boll. de. Accad. di Catania, 1895) go so far as to say that the rôle of the amœba in a dysenteric intestine is to combat the microbe and "that they are a true guardian to man's health." The authors feel drawn to make this statement because they observed that amœbæ absorb bacteria at times and that bacteria are often rare in their neighborhood, in the ulcerations of the large intestine. The assertion that was first made by Cunningham (loc. cit.), viz, that amœbæ were found in other intestinal diseases as well as in normal stools, was demonstrated without doubt by the experiments of Grassi (Significo patolog. dei protozoi parasitti dell'uomo. Rendiconti Accad. Linc. Rom., 1888), Kruse and Pasquale (loc. cit.), and Schuberg (loc. cit.). However, Kartulis in reply to Grassi's communication asserted that the amœbæ found in Egpyt by him were not identical with those found in the fæces of healthy individuals in Italy. Kruse and Pasquale clearly recognized the difference between these two forms of amœbæ. Inoculation of dysenteric fæces containing amœbæ dysenteriæ into the rectum of cats has given positive results in the hands of Loesch (loc. cit.), Hlava (Centralblatt. f. Baktr., 1887), Kartulis (loc. cit.), Kovacs (Zeitschr. f. Heilkundr., Feb., 1893), Quincke and Roos (Berlin Klin. Woch., No. 45, 1893), and Kruse and Pasquale (loc. cit.). Stools in which the amœba was not present gave negative results. Nevertheless, to the objection made that it was the bacteria in the stools which caused the ulceration of the large bowel and not the amœbæ, Kruse and Pasquale injected into two cats the contents of two different liver abscesses containing motile amœbæ, but sterile as regarded bacteria by both cover slips and cultural tests. In both of these cases dysentery with ulcerations in the large bowel was produced. They also, in order to learn the importance of different varieties of bacteria which had been found in dysenteric fæces and organs, injected six different varieties of organisms into the rectum of cats. In five cases the results were negative. One experiment which had been made with streptococci resulted in the death of the cat, although no dysentery was produced, from a clear septicæmia. They also found that the amœbæ of nondysenteric stools when injected into cats produced no lesions and no dysentery. Roos (loc. cit.) in six cases performed with nondysenteric amœbæ obtained the same result, while in twelve experiments with dysenteric amœbic stools which had been injected partly by os and partly per rectum he obtained six cases of dysentery. Celli and Fiocca (Annali deli Instituto d'igiene sperimentale di Roma, 95) have made the statement that they have succeeded in breeding the amœba of dysentery, the amœba of the normal intestine, and many other varieties, but still not free from bacteria (comp., p. 601). Their statements are not convincing in regard to amœba dysenteriæ when one looks at the description and diagram which they give. These amœbæ measured only from 4$\mu$ to 10$\mu$ in diameter, and were therefore of so small a size that they are hardly to be classified as dysenteric amœbæ. Dysenteric amœbæ may vary from 10$\mu$ to 50$\mu$, but hardly below 10$\mu$. They are generally considerably larger. Also these authors claim that when the dysenteric amœbæ were injected into the rectum of cats they obtained no results, but that positive results were obtained by the injection into cats of stools free from amœbæ. We are convinced that Celli and Fiocca were not always working with amœba dysenteriæ. Moreover, on page 212 of their work we find that in the one case in which living amœbæ took part there was "un po piu sanguinolenta," as in the other three cases in which the amœbæ were killed. It is just this quality, as Flügge has remarked, which often characterizes this dysentery. The other varieties of amœbæ Celli and Fiocca have bred from intestinal contents, the authors themselves confess, are entirely different from amœbæ coli. This only the more suggests that probably some of these amœbæ experimented with were harmless amœbæ and not amœbæ dysenteriæ.

In our studies on dysentery in Manila we have been entirely convinced that we meet with at least two varieties of amœbæ in the stools of human beings. One of these varieties (amœba dysenteriæ) we have found in 68 of our 79 cases of amœbic dysentery, and in the neighborhood of 300 clinical cases of dysentery.

In another class of cases (cases without dysentery) in which we have purposely set out to find amœbæ after the administration of Rochelle salts we have found amœbæ in a small number of the cases (in about 4 per cent of those examined). The amœbæ found in these cases, with no dysentery and no history of it, are somewhat smaller generally than those found in our dysentery cases and have never been seen to contain red blood corpuscles. We are not willing to say that there are any other definite constant differences between these amœbæ and the amœba dysenteriæ except with regard to their action on cats.

One of these cases which has been under our observation for several months has had these harmless amœbæ in his stools constantly during this time, yet he has no dysentery and no history of any, and he has no intestinal trouble. We have repeatedly injected large numbers of these nondysenteric amœbæ (amœbæ coli), while motile in the stools, into the rectum of cats, but with no effect. We have neither been able to produce dysentery with them nor any lesions of the large bowel. Our experiments with straw amœbæ, which we have bred, has been similar; in not one of these cases has any dysentery or ulceration of the large intestine been produced.

On the other hand, we have had no difficulty in producing dysentery and ulceration of the large bowel in cats by injection of the stools or contents of liver abscesses containing motile amœbæ dysenteriæ. In 2 cases in which the liver abscesses have been found sterile by cultural experiment, but which contained many motile amœbæ, dysentery and characteristic ulceration of the bowel was produced in the two cats used. In the stools of these cats and in the ulcers in their colons we have found very large numbers of motile amœbæ, often containing red blood cells. The ulcers in the bowel are most striking in their resemblance to the amœbic lesions of the large intestine in man. The mucosa and submucosa have been particularly affected. We have been able to produce early amœbic ulcers in three days after inoculation; in five days the ulcerations may be well advanced. The complete description of this work will be referred to in a later paper. In a large number of experiments we have not been able to produce ulcerations or dysentery by the injection into the rectum of cats of bloody mucous stools from our acute specific dysenteric cases.

Why is it, then, that there still exists so much controversy about the amœba dysenteriæ? Kartulis, Councilman and Lafleur, Kovacs, Kruse and Pasouale, as well as ourselves, have all shown that it is an exquisite tissue parasite. We are convinced that anyone who has sufficient and proper material at hand can easily convince himself of the pathogenic action of this parasite, amœba dysenteriæ, by inoculation of cats if he cares to take this trouble.

When we review the literature of amœbic dysentery we frequently find a number of dysentery cases reported in which amœbæ are found only in a very small number. Let us suppose that the case which we have spoken of, and which we have had under observation for the past few months, whose stools contain the amœba coli, with no symptom of dysentery, became infected with bacillus dysenteriæ. Then, if a group of cases occurred with infection with this bacillus, it might be reported that amœbæ were found in only 1 case, and hence amœbæ in general have nothing to do with dysentery, etc. We cite this case because we believe that instances of this kind have occurred. In certain countries under certain conditions harmless amœbæ might be found quite frequently in the stools. So when we read that an observer reports 25 cases of dysentery with 5 cases in which amœbæ were present we wish to inquire, first, what lesions were present in the large bowel in these 5 cases; and second, were these amœbæ found capable of producing dysentery and dysenteric lesions in cats?

It is very clear from the literature that all observers have not worked with the same amœba. We must also remember that there may be many reasons for not finding amœbæ in dysentery: First, in certain forms of dysentery amœbæ do not occur. Second, one examination will not suffice, nor will sometimes several. Occasionally one may not find them at all in the stools during life, and yet at necropsy they may be very numerous in the lesions. We recall 1 case in which we looked carefully for four days in succession at the stools, but were never able to find amœbæ. Bacillus dysenteriæ was also carefully sought for, but not found; neither was there any agglutination of the blood serum for bacillus dysenteriæ. The man died, and at necropsy motile amœbæ dysenteriæ were found in large numbers in the characteristic lesions of the large bowel. We must remember that in infections with the anchylostoma no eggs may be passed for several days when extensive infection may exist. The same may be true often with other intestinal parasites. Again, the stools must be fresh and not mixed with quinine or disinfecting solutions or urine, which substances naturally quickly kill amœbæ. The stools must not be too cold. Lastly, it is to be remembered that after ulceration has been established, and particularly in the healing stage, the amœba may disappear from the stools. In this stage from the already existing ulcers, however, there may still be a dysentery for a variable time, no doubt effected by the bacteria present in the intestine. We will also recall that all cases of amœbic dysentery do not die, but that a number recover, and that we often find healing ulcers at necropsy. So if amœbæ are not found near the close of a dysentery we can not always conclude that they were not present in the active stage of the disease.

In closing our remarks on our amœbic cases for the present we wish to say a word in regard to dysenteric liver abscess. As Manson states (Tropical Diseases, 1898), there can be no question as to the existence of an intimate relationship between dysentery and liver abscess. Kartulis states that of some 500 liver abscesses which had come under his observation 55 to 60 per cent were of dysenteric origin, but he does not state the proportion of cases of dysentery in which abscess supervenes. (Lafleur, in Allbutt's System of Medicine, Vol. IV, 1897.) In 3,680 dysentery autopsies made in various tropical countries and collated by Woodward, 779 (21 per cent) revealed abscesses of the liver. Kruse and Pasquale found abscess six times in 57 cases of amœbic dysentery; Councilman and Lafleur six times in 15 cases. We have found liver abscesses fourteen times in 97 cases of amœbic dysentery. It has been shown over and over again that in a large proportion of liver abscesses the usual pyogenic cocci are absent. Bacteria were absent (by cultural experiment) in 7 of our 14 liver abscesses. In 2 small abscesses they were absent. It is very suggestive, as Manson has said, that in just this form of abscess in which these organisms are absent we find amœbæ dysenteriæ. Moreover, we are to remember that a liver abscess is not a proper abscess; amœbic liver abscess pus is not like pus elsewhere. As an abscess it is altogether peculiar. The argument that bacteria are not found in large liver abscesses, it is true, may be met with the statement that they might have been present and died out, as sometimes happens in old pyosalpinx cases. This view receives some support from the fact that in some instances the pyogenic bacteria and sometimes colon bacilli are present. But we must remember, on the other hand, that this form of liver abscess is not an ordinary form of abscess, as has been pointed out above; also, as far as we know, no one has pointed out that bacteria are any more frequent in small (early) liver abscesses, but, rather to the contrary, that they are more often absent. It is to be remembered that also in those cases of liver abscesses which are typical of the form of which we have been speaking, but in which amœbæ have not been demonstrated, that amœbæ are often very hard to find in these abscesses. Occasionally, as has often been reported, they may be looked for several days before they are found. This may often be explained by the fact that they are not present in so great numbers in the body of the abscess cavity, but are found in greater numbers in the abscess wall in connection with the breaking down tissues. We ourselves have, on several occasions, when perfectly fresh pus has been sent to us from an operation on liver abscess, been unable to find amœbæ in it in a very prolonged search. When in pus from the same cases later we have found them in great numbers. So, unless the examinations have been repeated and very thorough, the statement that these abscesses contain no amœbæ is of little value. We fear that the statistics are made up from many such hasty examinations. It might also perhaps be argued that if bacteria had disappeared in these abscesses so might the amœbæ disappear, though the argument may not have so much force when used in this way. In conclusion, we must remember that the bacteria may be only secondary invaders in liver abscesses and that we find amœbæ often present when bacteria are not; that we often find amœbæ present at the same time with bacteria, and that the number of these cases (where the search for amœbæ has been thorough) in which the amœba has not been found are comparatively small.

We have referred above, in describing the acute form of our dysentery, to the ingestion of the bacillus dyenteriæ in one individual. An Indian criminal under sentence of death, shortly before his execution, with his own consent and for a remuneration, took, about 7 p. m., 15 grains of sodium bicarbonate and fifteen minutes later a forty-eight hour bouillon culture of bacillus dysenteriæ in warm milk. He had had absolutely no dysentery, and his stools examined previously were well formed, dark, and contained no blood or mucus. On the next morning a well-formed normal stool was passed. During the evening of the next day his bowels moved again. The stool was moderately large and soft. Fine flakes and streaks of grayish mucus could be seen in it. Microscopical examinations of particles of this mucus showed a very large number of bacteria. In some fields almost nothing but bacteria could be seen. Many of these were not motile. Others, not so numerous, were very motile, and still others slightly motile and of similar morphology to bacillus dysenteriæ or to bacillus coli communis. There were a number of epithelial cells and a few red blood cells. The next stool was passed nearly four hours later. It consisted practically of large masses of bloody streaked mucus, and in amount equalled a large stool. Microscopical examination showed numerous epithelial cells, leucocytes, red blood corpuscles, and a large number of bacteria. Very few food particles were present. The stool was made up practically of masses of mucus, cells, and bacteria. No amœbæ were present. During the night the patient had seven stools. They gradually became more blood streaked, and by the next day consisted of practically nothing but masses of reddish bloody mucus. During the day the patient had 12 stools, and the next night and morning 19 stools. The temperature had reached 102° F., and there was tenderness over the abdomen. We have no further notes on this case, but the patient recovered from his dysentery before execution. The onset here was not as abrupt as it often is in this form of dysentery. Natives are more or less immune to acute dysentery. The bacillus dysenteriæ was recovered from the stools and grew characteristically on all media after its recovery. More colonies of bacillus dysenteriæ developed on the agar plates than are often seen, yet the number of these colonies did not begin to equal the number of colon colonies which developed on the plates. We repeat again that we have never found the organisms in pure cultures in the stools. It has always been associated with bacillus coli communis and often with species of streptococci and sometimes staphylococci and other inconstant organisms. In fact, for a long time we were in doubt about the bacillus dysenteriæ, because we often found it in such small numbers in the stools and sometimes with great difficulty. Yet it is not more difficult to isolate from the fæces than bacillus typhosis when one looks at the right time. We have not referred to the virulent variety of bacillus coli described by Celli. It was not generally present in our acute cases. Occasionally the colon bacillus found in the stools of our cases showed no virulence toward animals; more rarely they were pathogenic for them. We, however, are inclined to think that certain varieties of colon bacilli may play an important part in certain forms of dysentery. The positive serum reactions which we have obtained at times for colon bacilli are suggestive. Nevertheless, we do not wish to lay too much stress on these reactions at present. Their interpretation now is in a somewhat uncertain light. We are about to undertake in the near future a more thorough study of these bacilli.

The experiments with bacillus dysenteriæ have shown us that when animals are immunized against large doses of this bacillus their blood shows certain antitoxic bodies, as evidenced by the fact that their blood serum in high dilutions causes agglutination of cultures of this organism, and by the fact that when their serum is injected at the same time with bouillon cultures of bacillus dysenteriæ into other animals no effect, or only a slight one, is produced by this organism. In this way we have been able, with monkey's blood serum, to render intraperitoneal injections of bacillus dysenteriæ into rats harmless. Reasoning in this way and from the blood serum reactions in our clinical cases in man, we have hoped that a serum therapy could be established for the disease, particularly as all other treatment is often of little avail. A cubic centimeter of the bouillon culture of bacillus dysenteriæ injected subcutaneously into a Manila pony causes a rise of temperature to 105° F. or more, with a gradual fall in a few days. During this time the animal may seem quite sick. If in the process of immunization an overdose is given the animal may become apparently quite ill and his temperature may rise to 108.5° F., as has happened on two occasions with our horse. The horse's blood now shows agglutination of bacillus dysenteriæ in high dilutions. We hope to be able to soon report on the treatment of the disease with this serum. We could never obtain monkey's serum of nearly so great an antitoxic strength as we have already procured from the horse.

Professor Flexner and Professor Barker, in their preliminary report upon an expedition sent by the Johns Hopkins University to investigate the prevalent diseases in the Philippines (Johns Hopkins Hospital Bulletin, February, 1900), state in regard to their bacteriological studies in dysentery: "The intestinal flora was studied in its entirety by means of plate cultures. Varieties of micro-organisms were separated. Many were well-known species. Tests with blood sera for agglutination were made. In this way two groups of bacilli were thus differentiated, (1) having affinities with the group of bacillus coli communis, (2) having affinities with the group of bacilli of which the bacillus typhosis is the type. A bacillus belonging to the second group which is still under study would seem to agree with the bacillus dysenteriæ isolated by Shiga from cases of endemic dysentery occurring in Japan. It is regarded by us as an important factor in the causation of the dysentery of the Philippine Islands." We have eagerly awaited Dr. Flexner's complete report on this subject, which we regret has not as yet reached us.

### CONCLUSIONS.

Two distinct forms of dysentery exist in and about Manila, (1) an acute specific infectious dysentery, (2) an amœbic dysentery.[1]

The first is probably caused by the bacillus dysenteriæ, and the disease can not be produced experimentally in animals. The second is caused by the amœba dysenteriæ, and the disease can be produced experimentally in cats.

These two types of dysentery may be separated easily clinically. The one by a blood serum reaction, and the other by the presence of amœbæ dysenteriæ in the stools.

There are also at least two forms of amœbæ found in the human stools. The one form, amœba dysenteriæ, is capable of producing dysentery and dysenteric lesions in man and cats. The other, amœba coli, is apparently not harmful to either of these.

In conclusion, we wish to thank Dr. Simon Flexner, professor of pathology in the University of Pennsylvania, for several valuable suggestions to one of us during the first part of this work, and to Dr. W. R. Hall, major and surgeon, United States Army, commanding the First Reserve hospital, for the use of his valuable medical library. Also, we wish to thank Dr. G. I. Cullen, acting assistant surgeon, United States Army, for photographs.

## RHEUMATIC AFFECTIONS.

Under the heading of rheumatic affections are tabulated the statistics of rheumatic fever, rheumatism, and myalgia and chronic rheumatic arthritis. In 1898 the rate of admission for the Army, regulars and volunteers, was 66.24, and in 1899 68.83 per thousand of strength. The rates in the Philippines, Cuba, Porto Rico, and the United States did not differ much from each other. The rate of discharge for disability on account of these rheumatic affections was 1.15 in 1898 and 1.52 in 1899, as compared with the average annual rate of 1.35 for the Regular Army during the decade 1888–1897.

## PULMONARY CONSUMPTION.

In 1898 there were reported 547 cases of pulmonary tuberculosis; 165 were terminated by discharge for disability and 38 by death, equaling the respective rates of 3.70, 1.12, and 0.26 per thousand of strength. In 1899 the cases numbered 420, with 190 discharges and 57 deaths, equaling the respective rates of 3.98, 1.80, and 0.54 per thousand men. The Philippine Islands gave the highest rates in 1898: Admission, 5.95; discharge, 2.12; death, 0.50. In 1899 the admission rate for Porto Rico was 5.10, for Cuba 4.49, and for the Philippines 4.48; the highest death rates occurred in Porto Rico and the Philippines, 0.80 and 0.79 per thousand men.

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[1] We have not referred in this article to the mild form of catarrhal dysentery which occurs, but is rarely fatal here.—R. P. S.

It was speedily discovered by our medical officers in the Philippines that consumptive cases progressed unfavorably in that climate, even when cared for in the convalescent hospital on Corregidor Island in Manila Bay. It has therefore became the practice to transfer such cases to the United States for treatment in the general hospital for consumptives at Fort Bayard, N. Mex. Many consumptives from Manila have passed under the observation of Maj. A. C. Girard, surgeon, United States Army, in command of the general hospital, Presidio of San Francisco, Cal., who is of the opinion that—

> Tubercular cases should be transferred (from the Philippines) at the earliest possible stage, even before the bacillus can be demonstrated. An occasional error of diagnosis would be amply compensated by the possibility of recovery from consumption by an early transfer to Fort Bayard.

During the past two years the greater tendency of the colored troops to become affected with pulmonary consumption is shown by a comparison of the rates of admission. In 1898, white troops, 3.65; colored, 4.59 per thousand of strength. In 1899, white, 3.96; colored, 4.20.

## DISEASES OF THE RESPIRATORY ORGANS.

These diseases, which in 1897 gave an admission rate of 77.74 and a death rate of 1.64, and during the decade 1887–1896 caused an average annual rate of 109.10 admissions and 0.83 death per thousand of strength, occasioned somewhat larger rates during the more active service of the years 1898 and 1899. In the former year the admission rate was 137.35, and in the latter 125.33. Troops in the United States had the largest rate in both years—152.13 in 1898 and 202.34 in 1899. The admission rate for these diseases in all the islands was less than the rate for the Army as a whole.

Pneumonia added but little to the admission rate of these diseases, but was the chief factor in the causation of mortality. In 1898 there were 1,020 cases with 136 deaths, and in 1899, 629 cases with 99 deaths, giving a total of 1,649 cases with 235 deaths in the two years, the fatal cases constituting 14.25 per cent of the total, or 1 death in 7 cases. The rate of admission for the Army in 1898 was 6.90 per 1,000 of strength, and the death rate 0.92 per 1,000. In 1899 these rates were 5.96 and 0.94, respectively. Troops in the United States had the largest and those in Porto Rico the smallest admission and death rates from this disease.

The mean annual admission rate during the civil war was 32.45 and the death rate 7.79 per thousand men. Twenty-six per cent of the cases were fatal, the disease occasioning 1 death in 3.85 cases. As a contrast to this, the mean annual rates of the decade, 1888–1897, were: Admission, 4.06; death, 0.63.

## ANKYLOSTOMIASIS.

While stationed at Ponce, P. R., Lieut. B. K. Ashford, assistant surgeon, United States Army, made a special study of the anæmia so common among the underfed natives of that island. In a number of cases he found the diseased condition to be due to the presence of the *Ankylostomum duodenale* in the intestine. His report, which is submitted below, was made the basis of a circular issued by the superior board of health of the island, inviting the attention of medical practitioners to the methods of recognizing and destroying the parasite.

I have the honor to report upon 20 cases of the severe anæmia commonly seen among the poor of this island. One of the first observations made by professional men here is the prevalence of anæmia, especially among the poor. This is at first attributed usually to starvation or poor food, then to malaria, and then to the "climate." Through the kindness of the physicians of Ponce, I am able to state something as to the mode of treatment adopted up to this time. Some have observed that the ignorant peon treated himself by purging, with beneficial effects for a time, and a relapse to previous conditions soon afterwards. Iron and arsenic have been prescribed largely, but with little benefit. Some physicians have frankly declared it beyond their power to cope with the disease, which they regarded as a pernicious progressive anæmia of obscure origin. The stools had been examined, but no worms being evident, this as a cause was dismissed. I was lead to examine the fæces for the ova of "ankylostomum duodenale," and found them in great numbers. Soon after a large dose of thymol brought away the parasites, male and female. No sooner had I stated my results to the physicians of this city than they agreed with the diagnosis, and verified the parasite and its eggs. Their testimony is as follows:

1. This disease is the most destructive and general disease of Porto Rico.
2. It is found typically and very frequently among the poor and badly fed.
3. Most cases are similar.
4. That bad food and bad hygiene are responsible for much of its power for evil.
5. That blood foods have never exercised more than a temporary influence on the course of this disease.
6. That improvement follows purgation.
7. That up to this time the existence of this parasite had not been proven on this island; or, if proven, not within their knowledge.

In studying this disease I have taken 20 cases which I considered typical of "Porto Rican anæmia," or "tropical chlorosis." These cases were selected from the provisional field hospital for indigent and sick Porto Ricans established after the flood of August 10, 1899, in this city. Although the histories of these cases are inclosed I should like to refer to such points as seem to me interesting and of frequent occurrence in this disease.

1. *The family history.*—Most patients give a history of deaths in the family from a like disease. At times this history is truly appalling, and casts a light on the extent of the infection among the people. Many claim the deaths to have been due to "malaria" or "diarrhea" or "obscure fever." Of course this matter is problematical, but it is fair to suppose, inasmuch as the disease is marked often by irregular fever, with intermissions, that their diagnoses may be questioned, and to recollect that our own physicians have in the past placed on malaria responsibilities which do not belong to it. But questions as to chills are extremely unsatisfactory. I know there is much malaria here in the lowlands; I have followed such cases through their course; but the testimony of local physicians coincides with mine, that malarial organisms in the blood are not so often seen as would be supposed. Chills, then, are not so frequent; there are few "ague cakes;" the pallor is not that of malaria, and the scleræ are not icteric. The most suggestive fact outside of blood examination is that the cases come from the mountains and the valleys; some of the very worst cases I have seen came from highly salubrious mountain districts. Nevertheless, I hesitate to affirm that many cases of malarial cachexias do not exist to swell the sum of anæmics here.

2. *The previous history of the patient.*—The diet is a powerful factor in turning the scale against the unhappy victim of ankylostomiasis. Rightly the physicians here quote its influence. Personally, I have eaten and slept in all parts of this island—not alone on the frequented roads, but in those rarely visited by strangers, and can submit my testimony to that quoted in support of this influence. The relation of the daily life among the working classes has been confirmed in talking with many owners of sugar and coffee plantations and their employees. They rise at from 4 to 6 a. m. Some take a little black coffee; some, boiled water and sugar; some, nothing. They work till 11, when they breakfast on about 4 ounces of codfish and a few pieces of plantain. They return to work at 1 and continue till 5 p. m. Dinner is composed of rice and beans; some have only boiled rice with lard, and some boiled rice alone. It may be mentioned that they get plenty of bad rum and some bad wine. This seems a slight enough diet, but the hurricane deprived them of even this, and the sick poor came drifting down on Ponce. I believe it not probable that those degraded to the level of people whose life is bounded by a tropical plantation, enjoying little beyond the cutting of cane and picking of coffee, can have a high standard of personal cleanliness, and, as a fact, bathing is not often practiced. Fæces are distributed over the earth wherever the individual happens to be while at work, or in a little shack when at home, but directly on the ground always. Indeed, fæces pollute their very houses. Ponce is a town of perhaps 40,000, yet it has no sewerage, and is in the lowlands near the sea. Closets and kitchens are in conjunction in many houses. The

water soon takes up its quota of whatever is noxious. Those who are clean in their habits (and the educated classes are a most cleanly people) are polluted by the filth of the poor and ignorant. The configuration of this island is one of steep mountains and deep ravines, with broad plains near the sea. Heavy rains wash the larvæ from each fæcal deposit into the water courses, and this muddy water is probably one source of contamination; contaminated earth on the hands of laborers is another; fouled garden is another. The larvæ have not yet been demonstrated in the water or mud. The drinking water of nearly all well-to-do people is filtered, and in this class we do not find so great a preponderance of this disease.

*3. The subjective symptoms.*—It is difficult to obtain a history of the disease from its inception, for many have it from infancy. Generally it is possible to obtain some such history as this: A variable appetite, some nausea and vomiting, pain in epigastrium, either constipation or diarrhea (or these may alternate), sometimes dysentery, swellings of the feet and ankles, no loss of weight, sleeplessness, restlessness, tinnitus aurium, giddiness, faintness, severe headaché, palpitation of the heart, progressive debility; little perspiration, but kidneys active; fever sometimes, but no chills. I have not been able to get a history of geophagism nor of intestinal hemorrhage described by some authors. Sometimes the patients improve for a time after medication, but not permanently.

*4. Objective symptoms.*—Pallor: This is divided into three classes by a prominent physician, but I can not see that it has reference to more than the individual color of the patient, whatever that may be, irrespective of the disease. The conjunctivæ, lips, tongue, gums, nails, and cheeks are in some cases perfectly pallid, the mucous membranes especially being of a deathly white. The skin is generally a pasty yellow, a dirty brownish gray, or a grayish white. Expression: A passive expression is often seen, and its peculiar character is heightened by puffiness of the eyes and bloating of the face. Œdema: This is simply the usual accompaniment of severe anæmia. Practically every variety is seen, the chief being, in order of importance, œdema of the feet and ankles, œdema of the face, ascites and œdema of the scrotum. Hypostatic congestion of the lungs exists often. The important point is that with this disease there may be emaciation. This has not been present often in my cases; on the contrary, the patients are apparently well nourished. Anæmic ulcers are sometimes seen on the legs and an incorrect accusation of syphilis may be made. Corneal ulcers are at times seen. One of my cases presented corneal ulcers of both eyes. Respiratory symptoms: Generally none from this disease save in increased rapidity of breathing from anæmia, serous accumulations, or hypostatic congestions. Liver: No constant symptom. Spleen: No constant symptom. Heart: These symptoms are very aggravated; signs of a pernicions secondary anæmia. Pulsating vessels: Both jugulars, superficial veins of the arm, and vessels about the root of the neck and heart, in severe cases with greatly dilated heart; pulsating suprasternal and supraclavicular regions and diffused pulsations in the anterior thoracic wall. All kinds of deductions might be made by a careless observer. Hæmic murmurs are almost constantly present and are in many cases heard in the veins of the neck. The urine: No albumen is found, and the specific gravity is constantly low. The pulse is weak, rapid, soft, and compressible. The blood: Attention is invited to the accompanying summary of blood examinations. The following deductions are drawn:

1. A severe anæmia, falling as low as that of Addison's anæmia in count of red cells in some cases.
2. A very low hæmoglobin average, and a very low color index.
3. A marked eosinophilia in some cases. Forty per cent reached in one case. This follows the observation of Neusser.
4. No leucocytosis common to the disease itself. Leucocytosis recorded is always apparently due to complications, as noted.
5. Frequent presence of normoblasts and in some cases megaloblasts, but never a majority of megaloblasts.
6. Poikilocytosis common. Manson denies this.
7. Utter unreliability of blood foods without removal of the cause, the ankylostomum. This blood examination was the first line of research taken up, and as soon as anæmia was proven the patient was given blood tonics with temporary supporting treatment suited to the individual case, with the idea that the patient might be carried along until the true cause could be discovered. Of course now all treatment has been substituted by anthelmintics, chiefly male fern and thymol, and the blood and heart tonics will be again tried when the eggs have disappeared from the fæces. I was led to examine the stools carefully from the high eosinophile count, and it is certainly evident that trichinosis has a rival for high counts in ankylostomiasis.

The ankylostome was found in all cases save one, a case of tuberculosis pure and simple. This patient was chosen to represent a contrast, and I think he does.

There is true leucocytosis, and the eosinophiles are not much in evidence. Moreover, the red-cell count is much higher than all the others, as is the hæmoglobin record. In calling attention to this infection we enter upon a large field. The histories of this disease have been made up to show what percentage of the people have the disease in certain countries: 25 per cent in Egypt; 20 per cent in Maitland; 52 per cent in Madras; 13 per cent in Kyoto, Japan; but no percentage can be cited as yet for this island. Dr. B. Scheube, of Greiz, speaks in his work of its existing in the Antilles, but no island is specified, nor is the extent of the disease stated. From my own observation, and from the opinions of the resident physicians of the island, I believe it to be widespread and destructive. Only 20 cases have been examined, yet all save one have given me the ova of this parasite in large numbers. As the 20 cases were chosen at random from hundreds more just like them clinically, and as the one exception noted was chosen only for contrast, I am convinced that further investigation will show that the disease has killed its hundreds, and that it is curable and preventable. The proof of its prevalence lies naturally in the hands of all scientific physicians of this island. I can not further judge than from a short experience and the proof positive evidence of 19 cases submitted. If this infection is as great as it is possible and probable that it is, we may turn to the practical question of importance:

There is in Porto Rico a dense population in a small country. In a space of about 100 miles by 60 we have probably over a million people. Of the working class it can not be denied that a large percentage have anæmia, and should the future verify my suspicion means are at hand to increase not only the well-being of those now suffering, but to insure to the owner of large haciendas of coffee and sugar a better class of labor; to insure to the army protection from the invaliding from anæmia of such troops as are enlisted here; to insure to our American troops protection against the disease; to relieve the State and the hospitals here from the expense of caring for a large number of anæmics who are now slowly dragging on to a fatal end. Perhaps our own sick reports will unfold some additional facts. I mention here only such possibilities as have occurred to my mind, but it is a significant fact that though it is present in Germany Scheube notes that it is confined to a few cases. In other words, it appears to assume only such proportions as a country will allow it to assume. I repeat, I have no certain knowledge of the proportions it has assumed here. I have been able only to call attention to what I consider to be its extensive prevalence, and I can not quote any full experience from treatment. I have given thymol in several cases, with the always easily demonstrated presence of the parasite. From the exceeding kindness and the scientific spirit shown by the local doctors, I can not doubt that it will be but a short time before measures will be taken, if there is sufficient extent of the disease found, to alleviate the conditions.

I therefore respectfully submit this report, a photograph of my cases, their detailed histories, specimens of the eggs and parasites in 4 per cent formalin solution, and various preparations of stained and unstained blood.[1] I will not lengthen this paper by any description of a parasite so well known and so fully described by the professor of helminthology at the Army Medical School, nor will I make further remark on the history of the disease, its evident prophylaxis, and simple cure, until I can call to my aid a more extensive familiarity with it.

## BERI-BERI.

Beri-beri prevailed extensively among Filipino prisoners of war at Cavite, where, in July, 1899, they were said to have been decimated by the disease, but no report concerning its prevalence there has been received. The first case reported as having occurred among our troops was in the person of a private of Company M, Fourteenth Infantry, a young man 22 years of age and a native of Akron, Ohio. His illness began suddenly, about July 21, 1899, while stationed at the arsenal at Imus. He was admitted to the hospital at Bacoor, August 6, where on August 17 Brigade Surg. George H. Penrose reported concerning him:

Present illness began rather suddenly, about July 21, 1899, after an attack of acute diarrhea, with pains and weakness in muscles of thighs and legs, preventing him from walking. Character of pain, dull aching; has had paræsthesia, "falling asleep" of legs. Has had occasional attacks of cardiac palpitations. These symptoms have become gradually more marked, and similar conditions are beginning in arms and forearms. Physical examination: Weight, 125 (former weight, 174) pounds; height, 70½ inches; apparently much emaciated; skin and mucous membranes pale; tongue pale, flabby, lightly coated; pupils react equally to light and distance; pulse of low tension, regular. Heart: Slight localized apex beat perceptible; first sound much ruffled, almost inaudible, second sound at base accentuated. Slight throbbing of carotids, pulsating jugulars. No murmurs audible. Area of cardiac dullness not increased. Muscular system of thighs and legs decidedly atrophied. Knee jerk practically abolished, muscles of thighs and calves tender on deep pressure. Sensation remains normal in legs. Gait weak and shuffling, not ataxic. Stands and walks with eyes closed. Electrical reactions not obtained. Steps have been taken to have the building wherein this soldier was quartered disinfected and whitewashed.

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[1] These were sent to the Army Medical Museum.

The only other information concerning this man found in the records is a note of his death October 4, 1899, in the Second Reserve hospital, at Manila: "Died at 8.15 a. m. of multiple peripheral neuritis, general, (beri-beri ?)."

A second case was reported by Acting Asst. Surg. J. M. Ward, from Carranglan, Luzon, August 1, 1900. The patient, a private of the Twenty-fourth Infantry, was admitted, with excessive pain in the head, back, and lower limbs, following a chill; temperature 38.6° C. Next morning the headache continued with stiffness and pain in the legs. The reflexes were abolished and the loss of power in the extensors of the right leg was so marked as to make locomotion impracticable; the right thigh measured 20 inches in circumference. Until June 25 his condition remained unchanged but for a decrease in pain and stiffness and a rapid atrophy of the right thigh. By June 30 an improvement was manifest. He was confined to bed, but his appetite returned and he slept well. During the next two weeks there was much improvement in his condition. The pain ceased and the patient became able to stand without a crutch, but the right thigh measured only 15.75 inches. Ten days later, July 25, he was able to walk to the company quarters, and on the 27th he was transferred to quarters. The treatment on admission was antimalarial with morphia hypodermatically; but this was speedily changed to potassium iodide, three times daily, with strychnia by hypodermatic injection, massage, and special diet.

### VENEREAL DISEASES.

The admission rate for the Army, regulars and volunteers, in 1899 was 133, with 2.61 discharges for disability per thousand of strength. This admission rate is considerably larger than those of former years. The rate of the Army, regulars and volunteers, was 82.04 in 1898, with 1.05 discharges per thousand men. The regulars in 1897 had a rate of 84.59, and their mean annual rate for the decade 1887-1896 was 76.92.

The admission rate of the regulars in 1898 was 79.92, of the volunteers 83.01, per thousand men.

The following tabulations show prevalence by comparative rates of admission in 1899:

1899—REGULARS AND VOLUNTEERS.

| | Army. | Cuba. | Porto Rico. | Philippines. | United States. |
|---|---|---|---|---|---|
| Syphilis and results | 13.98 | 16.56 | 30.59 | 11.74 | 13.49 |
| Gonorrhea and results | 80.23 | 87.92 | 170.64 | 60.39 | 87.29 |
| Chancroids and results | 38.79 | 44.39 | 85.06 | 44.65 | 26.57 |
| Total venereal | 133.00 | 148.87 | 286.29 | 116.78 | 127.35 |

1899—REGULARS.

| | Army. | Cuba. | Porto Rico. | Philippines. | United States. |
|---|---|---|---|---|---|
| Syphilis and results | 14.77 | 15.87 | 28.38 | 13.26 | 13.85 |
| Gonorrhea and results | 93.18 | 106.53 | 174.48 | 66.92 | 99.66 |
| Chancroids and results | 38.29 | 48.88 | 92.32 | 40.18 | 24.92 |
| Total venereal | 146.24 | 171.28 | 295.18 | 120.36 | 138.43 |

1899—VOLUNTEERS.

| | Army. | Cuba. | Porto Rico. | Philippines. | United States. |
|---|---|---|---|---|---|
| Syphilis and results | 12.75 | 17.57 | 50.00 | 9.60 | 12.89 |
| Gonorrhea and results | 59.93 | 60.38 | 136.84 | 51.23 | 67.01 |
| Chancroids and results | 39.56 | 37.74 | 21.05 | 50.93 | 29.28 |
| Total venereal | 112.24 | 115.69 | 207.89 | 111.76 | 109.18 |

The greater prevalence of these infections among the colored troops is seen from the following rates of admission to sick report:

| | White troops. | | Colored troops. | |
|---|---|---|---|---|
| | 1898. | 1899. | 1898. | 1899. |
| Syphilis and results | 9.39 | 13.39 | 28.24 | 22.43 |
| Gonorrhea and results | 51.18 | 78.16 | 67.29 | 109.82 |
| Chancroids and results | 17.91 | 37.04 | 54.05 | 63.67 |
| Total venereal | 78.48 | 128.59 | 149.58 | 195.92 |

Compared with the rates of previous years, this prevalence of venereal disease among our troops is excessive, and in Cuba and Porto Rico gave much anxiety to our medical officers. Our rates, however, high as they are, compare favorably with those of the British army at home and abroad. The admission rate at the home stations in 1898 was 132.7; at Dublin, 277.7, and at Portsmouth, 258.8. On foreign service the rates were higher than any of these—in the West Indies, 290.3; in the Straits Settlements, 348; among the large command in India, 371.4, and in China, 613.8. It is to be noted that the rate 371.4 in India is less by 136.4 per thousand than in 1897.

The increasing prevalence of venereal diseases among the troops in Matanzas and Santa Clara, Cuba, led Maj. F. J. Ives, surgeon, United States Volunteers, chief surgeon of the department, to institute measures for their repression. His system consisted in subjecting all enlisted men to a weekly examination, treating those who showed signs of disease and depriving them while under treatment of canteen privileges and passes from garrison. Thus all cases were submitted early to treatment, and were prevented from being aggravated by fresh exposures or by the use of stimulants. This system, which was at first opposed by army officers, is said to have given such excellent results that it now meets with nothing but commendation at the posts where it is in operation. Major Ives has not reported on this, and as he is now in China it is probable that he will not have an early opportunity of doing so.

The following circular was issued by the department commander:

CIRCULAR } HEADQUARTERS DEPARTMENT OF MATANZAS AND SANTA CLARA,
No. 4. } *Matanzas, Cuba, March 13, 1900.*

The following extracts from reports made by the chief surgeon of the department are approved and published for the information and guidance of the commands serving within the department:

* * * * * * *

"There should be a weekly examination of all the enlisted men in the command made by the medical officers, and the company commanders should be required to be in attendance. The men should be stripped and this examination should be complete as far as relates to any outward evidences of venereal disease or other infections. A list of all the men found infected with venereal troubles should be made out under the direction of the company commander and posted conspicuously on the bulletin board or in the barracks of each company organization. Among these thus affected only those who are actually incapacitated from performing their duties should be placed on sick report, the others being required to perform all duties. The privileges of the canteen and all pass privileges should be withdrawn from all whose names are thus posted and extra severe punishment meted out to those who are detected violating this rule. As soon as anyone thus listed is, in the opinion of the surgeon, free from all manifestations of venereal infection the surgeon should notify the company commander, so as to enable the latter to take his name from the list.

"This course can not be construed into actual punishment of the enlisted men, for the reason that in taking away his canteen and pass privileges it is merely in the nature of removing the causes which tend to retard his recovery.

"A weekly inspection is necessary, as there is no other way by which it can be determined whether or not the individuals are infected.

* * * * * * *

"In connection with my letter of March 8, 1900, relating to the amelioration of venereal infection among the troops in this command, I have the honor to further recommend that at each post a medical officer be required to give a brief course of instruction to the noncommissioned officers on subjects pertaining to this matter. This course should include an outlined history of such venereal diseases as syphilis, gonorrhea, and chancroids, with their effects and results; the most practicable methods of prevention, such as avoidance of these women when the chance of contagion is most apt to occur, proper cleanliness and disinfection, etc.; also any other points which will give a practical and comprehensive idea as to their origin, course, and sequelæ, and the proper methods to avoid and prevent contagion.

"The intention of these instructions is to impart a common-sense knowledge among the most intelligent of the enlisted men, so that they will be in a position to influence and instruct the men in their companies."

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The stated inspection will be made every alternate Friday, except when the increase of contagious diseases is shown, when they will be made every Friday.

Post commanders will submit to these headquarters a report in detail, showing the result of each inspection.

By command of Brigadier-General Wilson:

S. H. LINCOLN,
*Lieutenant-Colonel Tenth Infantry, Acting Adjutant-General.*

## ALCOHOLISM.

The admission rate for alcoholism in the Army, regulars and volunteers, was 14.49 per thousand of strength in 1899 and 8.65 in 1898, as compared with 27.86 in the Regular Army in 1897 and 36.90, the mean annual rate of the preceding decade. From this it will be seen that there is more drunkenness in a command doing garrison duty in time of peace than among troops in active service. But, notwithstanding the small admission rates recorded above, alcoholism and its direct results were responsible for 29 deaths and 7 discharges for disability in 1899, and for 24 deaths and 9 discharges in 1898. During the past year the rate in Porto Rico and Cuba, where the troops were on garrison duty, was, respectively, 49.37 and 26.33, while in the Philippines, where active service was in progress, the rate was only 6.29. Newspaper articles have given prominence to the disastrous effects of "vino" and other alcoholic drinks among our troops in the Philippines, but their statements are by no means sustained by the official reports. In 1898, when for five months the troops were stationed in garrison in Manila, a rate of 21.70 was given by the small number of regulars present, but the rate of only 4.71, given by the larger number of volunteers in service there, reduced the rates for the Army, regulars and volunteers, in the Philippines to 9.69. As stated in my last report, these rates do not represent the amount of intemperance in the Army or in any of its parts, but as they are all derived from similar data, to wit, the number of cases in which medical assistance was invoked to avert danger to life, they are useful for purposes of comparison.

## INSANITY.

*Cases and rates of admission for the Army, regulars and volunteers, during the calendar years 1898 and 1899.*

| | 1898. | | 1899. | |
|---|---|---|---|---|
| | Cases. | Rates. | Cases. | Rates. |
| In Cuba | 6 | 0.72 | 32 | 1.60 |
| In Porto Rico | 5 | .88 | 14 | 3.76 |
| In the Pacific islands | 12 | 1.21 | 84 | 2.14 |
| In the United States | 136 | 1.10 | 58 | 1.37 |
| In the Army | 159 | 1.08 | 188 | 1.78 |

In 1898 the rate of admission to sick report for the Army, regulars and volunteers, was 1.08 per thousand of strength, and in 1899, 1.78. The latter rate is higher than the mean annual rate of the decade 1888–1897, which was 1.17 per thousand, but it does not exceed the maximum rate of the decade, as may be seen from the following table, which shows that in 1892 the rate was 1.79 per thousand men:

| Year. | Mean strength of command. | Total number of cases. | Ratio per thousand of strength. | Year. | Mean strength of command. | Total number of cases. | Ratio per thousand of strength. |
|---|---|---|---|---|---|---|---|
| 1888 | 26,739 | 42 | 1.57 | 1896 | 27,183 | 22 | 0.81 |
| 1889 | 27,206 | 34 | 1.25 | 1897 | 27,374 | 21 | .77 |
| 1890 | 26,684 | 33 | 1.24 | | | | |
| 1891 | 26,460 | 37 | 1.40 | Mean | 27,117 | 31.7 | 1.17 |
| 1892 | 26,861 | 48 | 1.79 | | | | |
| 1893 | 27,659 | 35 | 1.27 | 1898 | 147,795 | 159 | 1.08 |
| 1894 | 27,674 | 24 | .87 | 1899 | 105,546 | 188 | 1.78 |
| 1895 | 27,326 | 21 | .77 | | | | |

The increase in the rate of admission in 1899 over the mean rate of the decade was due to a general rise in the rates, largest in Porto Rico (3.76 per thousand) and smallest in the United States (1.37 per thousand).

This increase was to have been expected, on account of the rapidity with which recruiting was effected during 1898 and 1899. It is well understood by army medical officers that among recruits there are always more mentally unsound men than among a similar number of civilians of the same age and physical development. The most careful physical examination often fails to detect a man whose brain works irregularly but who is sane enough to go to the recruiting office. Under the stimulus and excitement of the organization of troops many such men drift to the rendezvous, and must be eliminated after muster into service. Men excitable but not actually unbalanced lose their equilibrium under conditions of stress in the field, and the first two years of military life are apt to develop many such cases. Hence it was to be expected that the active recruiting of the past two years would bring into the ranks men who would increase the insanity admission rate of the Army. That this increase would be found chiefly among those sent on foreign service was also to be expected. No doubt many young men, separated from home and friends, became the subjects of intense mental depression, and their cases were properly recorded on the monthly reports of sick and wounded as cases of insanity, and as the only method affording a prospect of recovery was a return to their homes they were judiciously shipped by transport to the United States. Many such cases recovered during the trans-Pacific voyage or during their detention for observation at the general hospital, Presidio of San Francisco, Cal., and never reached the Government Hospital for the Insane, at Washington, D. C. That this is no mere supposition may be inferred from the following statement concerning the insanity cases of the Army as a whole and of the Philippine army:

In the Army, regulars and volunteers, during the calendar years 1898 and 1899 there were reported on the monthly reports of sick and wounded 347 cases of insanity, and 202 of these cases, or 58.2 per cent, were committed to the Government Hospital for the Insane. One hundred and thirty-five cases, or 66.7 per cent of the commitments, recovered in an average period of 3.9 months, 13 were improved, 6 died, and 48 remained unimproved. Ninety-six of the 347 cases were reported on the monthly reports of troops serving in the Pacific islands, and 32 of these, or 33.3 per cent, were sent to the Government Hospital for the Insane. Seventeen cases, or 53.1 per cent of those committed, recovered in an average period of 3.6 months, 2 were improved, 2 died, and 11 remained under treatment.

It is not deemed necessary to do more than present these official figures to silence the sensational newspaper paragraphs which have been published during the past year relative to the unusual number of cases of insanity which have been returned to the United States from our troops operating in the Philippine Islands.

## SPECIAL MEDICAL REPORTS.

The following list comprises the reports on medical subjects rendered by medical officers during the fiscal year ended June 30, 1900:

| Name. | Rank. | Report. |
|---|---|---|
| Alden, Wm | Acting assistant surgeon | Pernicious malaria. |
| Appel, D. M | Major and surgeon | Laryngeal tuberculosis. Pulmonary tuberculosis, 6 cases. Weekly statement of gain and losses in weight of patients in general hospital, Fort Bayard, N. Mex. Pulmonary tuberculosis, 5 thermographs. Tuberculosis. |
| Armstrong, S. T | Major and surgeon, volunteers. | Yellow fever at Puerto Principe, Cuba. |
| Ashford, B. K | First lieutenant and assistant surgeon. | Ankylostomiasis. |
| Baker, David | do | Typhoid fever. |
| Beal, H. W | Acting assistant surgeon | Yellow fever, transport McClellan. |
| Bradley, A. E | Captain and assistant surgeon. | Diphtheria on hospital ship Relief. |
| Cardwell, H. W | Major and surgeon, volunteers. | Acute dysentery. |
| Carr, L. C | do | Yellow fever, Santiago, Cuba, 1899. |
| Cattermole, C. A | Acting assistant surgeon | Prevention of disease among soldiers. |
| Chamberlain, W. P | First lieutenant and assistant surgeon. | Malta fever, 2 cases. |
| Church, J. R | do | Zoster faciei. |
| Cogswell, Wm | Major and surgeon, volunteers. | Typhoid fever. |
| Cox, Walter | First lieutenant and assistant surgeon. | Malta fever. |
| Craig, Chas. F | Acting assistant surgeon | Report of bacteriological laboratory, U. S. general hospital, Presidio, San Francisco, Cal. Report on dysentery. |

| Name. | Rank. | Report. |
|---|---|---|
| Curry, J. J | Acting assistant surgeon | Malta fever. Blood examinations in typhoid fever. |
| Davis, John G | Major and surgeon, volunteers. | Chart, yellow fever and immigration. |
| Dougherty, J. C | Acting assistant surgeon | Yellow fever, 2 reports. |
| Drake, C. M | Major and surgeon, volunteers. | Variola. |
| Dudley, F. W | Acting assistant surgeon | Do. |
| Edger, B. J | First lieutenant and assistant surgeon. | Varioloid. |
| Fauntleroy, P. C | do | Report of Second Division field hospital, Eighth Army Corps, Angeles, P. I. |
| Flagg, C. E. B | Captain and assistant surgeon. | Variola. Tetanus. Pemphigus. |
| Forwood, W. H | Colonel and assistant surgeon-general | Inspection of general hospital, Presidio, San Francisco, Cal. |
| Fry, C. W | Acting assistant surgeon | Ptomaine poisoning on the transport City of Rio de Janeiro. |
| Gibson, E. T | do | Varioloid, 3 cases. |
| Girard, A. C | Major and surgeon | Report of autopsies performed at U. S. general hospital, Presidio, San Francisco, Cal., July 11 to Dec. 31, 1899, 41 cases. Autopsies made during January, 1900, 7 cases. Autopsies made during February, 1900, 11 cases. Autopsies made during April and May, 1900, 13 cases. |
| Godfrey, G. C. M | Captain and assistant surgeon. | Deaths, Pinar del Rio, Cuba, 1897 to 1900. |
| Gorgas, W. C | Major and surgeon | Map, yellow-fever cases, 1899. Yellow fever at Havana, Cuba, 1890 to 1900. |
| Grandy, L. B | Captain and assistant surgeon volunteers. | Variola. |
| Havard, V | Major and surgeon | Yellow fever at Santiago, Caba. Yellow fever, Division of Cuba. Inspection, posts in Cuba. Yellow fever, Quemados, Cuba. |
| Howard, D. C | Captain and assistant surgeon. | Cerebro-spinal meningitis. Insanity. |
| Hicks, J. R | Acting assistant surgeon | Gonorrheal pneumonia. Pelvic abscess. Æstivo-autumnal malarial fevers, 2 cases. |
| Hodson, F. A | do | Cardiac asthma. |
| Hughes, L. S | do | Typhoid fever. |
| Ireland, M. W | Captain and assistant surgeon. | Do. |
| Jackson, Thos. W | Acting assistant surgeon | Malarial fevers at Pinar del Rio, Cuba. |
| Kean, J. R | Captain and assistant surgeon. | Types of fever at Columbia Barracks, Quemados, Havana, Cuba. |
| Kieffer, C. F | do | Variola. |
| Kulp, John S | do | Report of supplementary hospital, Manila, with photographic illustrations. Bubonic plague. |
| Laine, D. T | Acting assistant surgeon | Yellow fever, thermographs, 2 cases. |
| Maclean, D., jr | do | Chronic alcoholism. |
| Mason, Chas. F | Captain and assistant surgeon. | Pemphigus contagious on transport Grant. Results from glycerinated vaccine lymph. Sanitary corps, insurrecto army. |
| McCaw, W. D | do | Scarlet fever. Variola. |
| Metcalf, B. H | Acting assistant surgeon | Alcoholism. |
| Miller, W. G | do | Variola at Angel Island, September and October, 1899. |
| Morris, E. R | Captain and assistant surgeon. | Diphtheria. Scarlet fever. Tuberculosis. |
| Moseley, E. B | Major and surgeon | Variola. |
| Munson, E. L | Captain and assistant surgeon. | Army ration in the Tropics. |
| Norman, Seaton | Captain and assistant surgeon volunteers. | Variola. |
| Nunez, E. F | Acting assistant surgeon | Yellow fever. |
| Peed, Geo. P | do | Typhoid fever. |
| Penrose, G. H | Major and surgeon, volunteers. | Beri-beri. |
| Perley, H. O | Major and surgeon | Work done on hospital ship Relief, January to May 31, 1900. |
| Poindexter, J. D | Captain and assistant surgeon. | Disposal of excreta in camps. |
| Pope, B. F | Lieutenant-colonel and deputy surgeon-general. | Measles at Columbus Barracks, Ohio. |
| Quinton, W. W | Captain and assistant surgeon. | Yellow fever. |
| Rossiter, P. S | Acting assistant surgeon | Yellow fever. |
| Saleeby, Najeeb M | do | Epidemic of fever at Columbia Barracks, Havana, Cuba. |
| Shafer, J. J | do | Chronic myocarditis. |
| Shellenberger, J. E | Major and surgeon, volunteers. | Variola. |
| Shimer, Ira A | First lieutenant and assistant surgeon. | Insanity. |
| Smith, Bat | Acting assistant surgeon | Report on yellow fever. Salol in yellow fever. |

| Name. | Rank. | Report. |
|---|---|---|
| Stark, A. N | Captain and assistant surgeon. | Yellow fever at Columbia Barracks, Havana, Cuba. |
| Strong, R. P | First lieutenant and assistant surgeon. | Etiology of dysentery in the Philippines. |
| Taylor, B. D | Major and surgeon | Bubonic plague, Honolulu, H. I. |
| Wells, G. M | Captain and assistant surgeon. | Ptomaine poisoning, 57 cases, San Juan, P. R. |
| Williams, R. E | Acting assistant surgeon | Variola. |
| Williamson, L | First lieutenant and assistant surgeon. | Yellow fever, 2 reports. |
| Wilson, C | Acting assistant surgeon | Typhoid fever at Aibonito, P. R. |
| Wilson, N. W | do | Measles. Locomotor ataxia. |
| Woodhull, A. A | Lieutenant-colonel and deputy surgeon-general. | Report of the medical department, Philippines, June 30, 1899. |

## INJURIES.

The number of injuries, with the discharges for disability and the deaths occasioned by them in the Army, regulars and volunteers, in the years 1898 and 1899 are here tabulated, together with the ratios per thousand of strength:

### 1898.

[Mean strength, 147,795.]

| Injury. | Admissions. | | Discharges. | | Deaths. | |
|---|---|---|---|---|---|---|
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Contusions and sprains | 7,412 | 50.15 | 33 | 0.22 | 1 | 0.01 |
| Dislocations | 271 | 1.83 | 10 | .07 | 1 | .01 |
| Fractures, not gunshot | 790 | 5.35 | 28 | .19 | 17 | .12 |
| Wounds, not gunshot | 3,285 | 22.23 | 9 | .06 | 13 | .09 |
| Wounds, gunshot | 2,057 | 13.92 | 114 | .77 | 302 | 2.04 |
| Other injuries | 6,932 | 46.90 | 232 | 1.57 | 112 | .76 |
| Total | 20,747 | 140.38 | 426 | 2.88 | 446 | 3.03 |

### 1899.

[Mean strength, 105,546.]

| | | | | | | |
|---|---|---|---|---|---|---|
| Contusions and sprains | 7,158 | 67.82 | 11 | 0.10 | | |
| Dislocations | 243 | 2.30 | 4 | .04 | | |
| Fractures, not gunshot | 671 | 6.36 | 38 | .36 | 14 | 0.13 |
| Wounds, not gunshot | 3,709 | 35.14 | 9 | .09 | 23 | .22 |
| Wounds, gunshot | 2,276 | 21.56 | 226 | 2.14 | 538 | 5.10 |
| Other injuries | 6,258 | 59.29 | 184 | 1.74 | 129 | 1.22 |
| Total | 20,315 | 192.47 | 472 | 4.47 | 704 | 6.67 |

The total number of injuries reported was nearly the same in both years, but the rate per thousand of strength is higher in 1899, because the mean strength of the Army was not so large in that year as in 1898. The rates of admission, 140.38 in 1898, and 192.48 in 1899, are smaller than the corresponding rate, 290.08, of the Regular Army in 1897, when the troops were on garrison duty at stations in the United States. That the injuries reported during a year of quiet garrison life are relatively more numerous than those recorded during a period when large commands were engaged in active and exhausting service is due to the care taken in times of peace to record the case of every man excused from any part of his military duty on account of sickness or injury. During active service trivial cases receive medical attention at sick call, but are seldom taken up on the register of sick.

The increase in the rates of discharge for disability from injury in 1898 and 1899, as compared with 2.02 per thousand of strength in 1897, is due to gunshot injuries, which of themselves occasioned a rate of 2.14 in 1899.

Correspondingly the death rate of 1.61 in 1897 became increased to 3.02 and to 6.67 during the two following years.

More than one-third of the injuries consisted of contusions and sprains, but although 44 men were discharged for resulting disability during the two years, only one case of death was reported.

Incised wounds in 1898 caused a total of 1,191 admissions to sick report, with 10 deaths, equivalent to an admission rate of 8.06 and a death rate of 0.07 per thousand of strength, and in 1899 a total of 1,315 admissions, with 21 deaths, equivalent to an admission rate of 12.46 and a death rate of 0.20, as compared with 16.34 and 0.03, the respective average annual rates of the decade of peace 1888–1897. It is to be noted that 4 of these fatal wounds in 1899 were suicidal and 4 homicidal.

Included among these incised wounds are 21 cases reported as bolo wounds. Eight of these were almost immediately fatal, 9 were returned to duty, 2 discharged on certificates of disability, and 2 mustered out with their regiments.

*Drowning.*—Thirty-five deaths from drowning were reported in 1898, 13 from the Volunteer and 22 from the Regular Army. Ninety-nine deaths were reported in 1899, 19 volunteers and 80 regulars; 78 of the drownings occurred in the Philippines.

*Exhaustion from fatigues and exposures* occasioned 1,410 admissions to sick report in 1898 and 1,476 in 1899, equivalent to the respective rates of 9.54 and 13.98 per thousand of strength. Eleven deaths and 9 discharges were reported during the former year; 3 deaths, but no discharge, during the latter. The volunteers suffered from this cause considerably more than the regulars. Their admission rate in 1898 was 10.89, as compared with 6.61 among the regular troops, and in 1899, 17.37, as compared with 11.82. Most of these cases occurred in the Philippine Islands, where the rate per thousand of volunteer troops serving in those islands was 40.10.

*Heat stroke* occasioned 544 admissions in 1898, equal to 3.68 cases per thousand men, with 9 deaths and 12 discharges for disability, and in 1899, 204 admissions, equal to 1.93 cases per thousand, with 2 discharges but no death. The regulars were the heavier sufferers from this cause, their admission rate having been 5.34 in 1898, with 8 deaths and 3 discharges, as against a rate of 2.92 in the volunteers, with 1 death and 9 discharges, and 2.20 in 1899, as against the volunteer rate of 1.51, with 1 discharge and no death in each instance.

*Hernia.*—In the Army, regulars and volunteers, in 1898, 1,050 cases of rupture were reported, with 171 discharges and 2 deaths. The admission rate for the volunteers was 7.86 per thousand men and for the regulars only 5. This implies a higher grade of physique on the part of the latter. In 1899, however, the rate for the regulars, 7.57 per thousand, was nearly as high as that for the volunteers, 7.71, a result probably of hasty recruiting.

The following cases, additional to those published in previous annual reports from this office, have been operated on for the radical cure of hernia. This list includes the cases of 53 regular soldiers, 17 volunteer soldiers, 4 in which the organization is not stated, and 5 civilians. Besides these cases reported specially, 49 cases are mentioned as having been operated on at the First Reserve Hospital, Manila. (See p. 836.

| Name. | Organization. | Age. | Hernia. | Date of operation. | Operator. |
|---|---|---|---|---|---|
| G. S. | Pvt., Ordnance | | Right inguinal | Jan. 28, 1899 | Maj. Wm. H. Arthur, surgeon, U. S. A. |
| J. M. | Corpl., D, 7th Cav | | do | Mar. 5, 1899 | |
| J. O. | Pvt., C, 2d Arty | | Left inguinal | Mar. 29, 1899 | |
| G. F. T. | Pvt., D, 2d Arty | | do | do | |
| H. A. | Pvt., G, 15th Infty | | Ventral | May 7, 1899 | |
| G. A. F. | Pvt., Ordnance | 28 | Left inguinal | July 6, 1899 | Maj. J. M. Banister, surgeon, U. S. A. |
| W. A. M. | Cadet, U. S. M. A | | Right inguinal | Aug. 22, 1899 | |
| D. H. B. | do | | do | Aug. 28, 1899 | |
| R. P. | Pvt., band, U. S. M. A | | Left inguinal | Oct. 20, 1899 | |
| R. R. | Pvt., army service | | Left femoral | Mar. 31, 1900 | |
| R. R. | do | | Right femoral | May 10, 1900 | |
| S. B. H. | Cadet, U. S. M. A | | Right inguinal | May 15, 1900 | |
| C. F. C. | do | | do | May 13, 1900 | |
| E. R. W. | Cadet, U. S. M. A | | do | July 6, 1900 | |
| C. A. P. H. | Major, 8th Cav | 48 | do | June 29, 1899 | Capt. W. C. Borden, assistant surgeon, U. S. A. |
| A. E. C. | Pvt., C, 3d Arty | 31 | Ventral | Sept. 12, 1899 | |
| C. M. | Saddler, M, 7th Arty | 35 | Left inguinal | Sept. 15, 1899 | |
| W. H. | 2d class pvt., Ordnance | 46 | do | Sept. 19, 1899 | |
| A. A. C. | Civilian | 31 | Double inguinal | Oct. 10, 1899 | |
| E. H. | Sergt., F, 7th Arty | 37 | Right inguinal | Nov. 3, 1899 | |
| O. F. | Sergt., A, 5th Arty | 39 | do | Nov. 10, 1899 | |
| J. W. | Pvt., Hospl. Corps | 24 | do | Nov. 24, 1899 | |
| A. D. M. | Pvt., C, 19th Infty | 27 | Ventral | Jan. 12, 1900 | |
| H. G. L. | 1st lieut., 24th Infty | 34 | Left inguinal | Feb. 2, 1900 | |
| W. H. J. | Civilian | 25 | Right inguinal | Feb. 9, 1900 | |
| M. J. | Pvt., H, 2d Arty | 27 | do | Mar. 13, 1900 | |
| O. O. M. | 2d class pvt., Engineers | 24 | Double inguinal | May 30, 1900 | |
| P. F. | Pvt., C, 4th Arty | 24 | Left inguinal | June 8, 1900 | |
| R. R. | Pvt., G, 2d Infty | 22 | Right inguinal | June 12, 1900 | |
| P. M. K. | Civilian | 52 | Double inguinal | June 19, 1900 | |
| M. S. H. | do | 38 | Right inguinal | June 20, 1900 | |
| C. J. | Pvt., D, 24th Infty | | do | Apr. 1, 1900 | Capt. A. E. Bradley, assistant surgeon, U. S. A. |
| C. N. | Band, U. S. M. A | | Left inguinal | Feb. 2, 1899 | First Lieut. D. F. Duval, assistant surgeon, U. S. A. |
| C. S. | Pvt., M, 24th Infty | 21 | Inguinal | Dec. 2, 1899 | Maj. R. G. Ebert, surgeon, U. S. A. |
| J. E. K. | Sergt., F, 13th Minn. Vols | | Right inguinal | Apr. 14, 1899 | Maj. R. J. Fitzgerald, surgeon, U. S. V. |
| R. A. D. | Pvt., A, 13th Minn. Vols | | do | June 6, 1899 | |
| L. | | | do | Jan. 31, 1900 | Capt. C. E. B. Flagg, assistant surgeon, U. S. A. |
| | | | do | Feb. 1, 1900 | |
| | | | do | Jan. 24, 1900 | |
| G. M. | Pvt., 25th Infty | | do | Aug. 15, 1899 | Col. Wm. H. Forwood, assistant surgeon-general, U. S. A. |
| F. N. F. | Rect., unassigned | | do | July 9, 1899 | Maj. A. C. Girard, surgeon, U. S. A. |
| M. S. | | | do | Aug. 15, 1899 | |
| E. H. | P. Co., 10, Cas. Detch | | do | do | |
| W. H. | Q, Sergt., 1st N. D. V. I | | do | do | |
| S. J. L. | Pvt., 1st Colo. V. I | | Left inguinal | Aug. 16, 1899 | |
| S. V. | Pvt., K, 1st Colo. V. I | | Double inguinal | Aug. 30, 1899 | |
| L. W. K. | Pvt., I, 20th Kans. V. I | | Right inguinal | Sept. 3, 1899 | |
| L. W. W. | Pvt., M, 1st Cal. V. I | | Left inguinal | do | |
| C. W. N. | Sergt., G, 1st N. D. V. I | | Right inguinal | Sept. 7, 1899 | |
| A. H. H. | Corpl., B, 1st N. D. V. I | | Left inguinal | do | |
| C. C. | Sergt., 9th Cav | | do | Sept. 9, 1899 | |
| N. P. S. | Pvt., D, 1st Cal. H. A | | do | do | |
| C. K. | Wag., D, 1st S. D. V. I | | Right inguinal | Sept. 16, 1899 | |
| L. O. | Pvt., A, 1st Idaho V. I | | Left inguinal | do | |
| W. McL. | 2d lieut., 1st N. D. V. I | | do | Sept. 19, 1899 | |
| L. P. A. | Pvt., A, 1st Cal. H. A | | Right inguinal | Oct. 11, 1899 | |
| T. McC. | Pvt., A, 1st Idaho V. I | | do | do | |
| F. J. M. | Pvt., G, 45th Infty | | Left inguinal | Nov. 2, 1899 | |
| O. L. B. | Pvt., B, 22d Infty | | do | Dec. 4, 1899 | |
| H. H. S. | Discharged soldier | | do | Feb. 10, 1900 | |
| E. B. B. | Capt., I, 16th Infty | | Right inguinal | Feb. 12, 1900 | |
| E. H. J. | Discharged soldier | | do | Feb. 27, 1900 | |
| D. F. A. | Capt., 12th Infty | | Left inguinal | Apr. 14, 1900 | |
| L. B. | Pvt., N, 6th Arty | | do | do | |
| A. J. C. | Pvt., Hospl. Corps | | Right inguinal | Apr. 24, 1900 | |
| H. W. B. | Pvt., O, 3d Arty | | do | Apr. 28, 1900 | |
| R. B. | Pvt., B, 16th Infty | | do | May 26, 1900 | |
| W. E. B. | Act. hospl. steward | | Left inguinal | do | |
| P. K. | Pvt., Ordnance | | Double inguinal | June 11, 1900 | |

| Name. | Organization. | Age. | Hernia. | Date of operation. | Operator. |
|---|---|---|---|---|---|
| L. E. C. | Pvt., 29th Kans. V. I |  | Right inguinal | Aug. 15, 1899 | Capt. Henry A. Shaw, assistant surgeon, U. S. A. |
| E. B. | Pvt., M, 10th Cav |  | Left inguinal | Jan. 18, 1900 | First Lieut. Ira A. Shimer, assistant surgeon, U. S. A. |
| T. M. | do |  | do | do |  |
| T. McG. | General prisoner |  | Right inguinal | Jan. 23, 1900 |  |
| F. H. | Pvt., D, 8th Infty | 49 | Left inguinal | Feb. 25, 1900 | Capt. A. N. Stark, assistant surgeon, U. S. A. |
| P. C. | Pvt., H, 7th Cav | 26 | Double inguinal | Mar. 31, 1900 |  |
| J. E. McG. | Mus., F, 2d Arty | 48 | Left inguinal | Apr. 18, 1900 |  |
| G. G. S. | Act. hospl. steward |  | Right inguinal | May 27, 1900 |  |
| J. E. F. | Civilian |  | Left inguinal | June 3, 1900 |  |
| R. B. | Corpl., B, 1st Arty |  | do | Jan. 12, 1900 | Capt. Charles Willcox, assistant surgeon, U. S. A. |

## GUNSHOT INJURIES.

*Regular Army, 1898.*—During the calendar year 1898 there were reported from the Regular Army 1,457 gunshot injuries, 1,320 of which were battle casualties and 137 the result of accidents, quarrels, attempted suicide, etc.

Of the battle wounds, 1,221 were said to have been caused by bullets, 83 by shell, and 16 by shrapnel. In 57 cases the site and extent of the wounds were not stated. Flesh wounds in various parts of the body numbered 860, constituting 68.1 per cent of the total number in which the site of the wound was stated; 85 were penetrating wounds of the thorax or abdomen; 41 fractures of the cranial or facial bones, and 7 of the spine; 140 fractures of the upper extremity, in 86 of which only the metacarpus or fingers were involved; 130 fractures of the lower extremity, the shaft of the femur being involved in 26, the kneejoint in 17, the leg and ankle in 34, and the metatarsus and toes in 53.

The site and character of these wounds and the manner in which the completed cases were terminated are stated in my last annual report, pages 308–314.

*Volunteer Army, 1898.*—In the volunteer force during the calendar year 1898, 689 gunshot injuries were reported. Eighty-nine of these were immediately fatal and were not taken up on the reports of sick and wounded.

Of the 600 cases taken on sick report, 29, or 4.8 per cent, ended fatally; 4 ended in death, but from other causes than the gunshot injury; 437 were returned to duty; 18 were discharged on certificates of disability in 1898, and 8 others in 1899; 7 were discharged by order, and the injured men in 97 cases were mustered out with their regiments.

Of the 600 cases, 362 were battle wounds, 250 of which ended in return to duty, 12 in death as the result of the wounds, and 4 in death from other causes. Six of the wounded men were discharged on certificates of disability in 1898 and 3 others in 1899. Three were discharged by order and 84 were mustered out with their regiments.

Of the 600 cases 238 were not battle wounds, but 208 of them were reported as having been incurred in the line of duty.

Flesh wounds in various parts of the body numbered 412, or 68.7 per cent of the whole number of cases.

Of 8 fractures of the bones of the cranium 4 terminated fatally. Of 6 fractures of the bones of the face 1 proved fatal from secondary hemorrhage after ligation of the lingual artery. Of 13 wounds of the neck 3 were fatal. Of 2 fractures of the spine both patients died, the only operative proceedings recorded being the removal of spiculæ of bone in one of the cases.

Thirty-two penetrating wounds of the thorax were reported, of which 6 were fatal. A rib was resected in 1 case for empyema, with a favorable result.

Of 12 penetrations of the abdomen 2 ended favorably without surgical intervention and 10 were fatal. Among the latter was 1 in which the abdomen was opened and 1 in which a portion of the injured intestine was resected.

In 9 cases of fractured humerus, none fatal, the operative work consisted of amputation in 2 cases, removal of fragments of bone in 1 case, and an incision for drainage in 1 case. In 12 fractures of the forearm amputation was performed in 2 cases, fragments of bone removed in 1 case, and the bullet was removed in 2 cases, in 1 of which the X ray was used for the discovery of the missile. In 25 cases of fractured fingers amputation was performed in 11 cases.

Nine fractures of the femur, none fatal, were reported. Amputation and reamputation were performed in 1 case, and the missile or fragments of bone were extracted in 3 cases. The kneejoint was injured in 9 cases, in 1 of which the joint was opened and drained. The leg was fractured in 7 cases, in 1 of which amputation was performed. The tarsus and metatarsus were fractured in 5 cases, necessitating amputation in one instance, and the toes were fractured in 3 cases, all of which required amputation.

In a flesh wound of the lumbar region the bullet was discovered by the X ray, but was not removed.

The following tabulations give the details of these gunshot injuries:

*Killed by gunshot.*

VOLUNTEER ARMY, 1898.

| Character and location of wounds. | How received. | | | | | | Nature of missile. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Not in action. | | | | | In action. | | | Not in action. | | |
| | In action. | In line of duty. | Not in line of duty. | Suicide. | Homicide. | Total. | Mauser. | Bullets not stated. | Shell. | Bullet. | Revolver. | Shrapnel. |
| Head fracture | 12 | 3 | ...... | 1 | 2 | 18 | 3 | 9 | .... | 4 | 1 | 1 |
| Face fracture | 1 | ...... | ...... | .... | .... | 1 | 1 | ...... | .... | ...... | ...... | ...... |
| Neck | ...... | 1 | ...... | .... | .... | 1 | ...... | ...... | .... | 1 | ...... | ...... |
| Thorax, penetrating | 9 | 1 | ...... | 4 | 6 | 20 | 1 | 8 | .... | 11 | ...... | ...... |
| Abdomen, penetrating | 7 | 1 | ...... | 1 | 1 | 10 | 3 | 2 | 2 | 3 | ...... | ...... |
| Thigh fracture, upper third | 1 | ...... | ...... | .... | .... | 1 | ...... | 1 | .... | ...... | ...... | ...... |
| Unknown | 25 | 8 | ...... | 2 | 3 | 38 | 8 | 17 | .... | 13 | ...... | ...... |
| Total | 55 | 14 | ...... | 8 | 12 | 89 | 16 | 37 | 2 | 32 | 1 | 1 |

### *Gunshot wounds which terminated fatally.*

VOLUNTEER ARMY, 1898.

| Character and location of wound. | How received. | | | | | | Nature of missile. | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Not in action. | | | | | In action. | | Not in action. | |
| | In action. | In line of duty. | Not in line of duty. | Suicide. | Homicide. | Total. | Mauser. | Bullets not stated. | Bullet. | Revolver. |
| Head, fracture | 4 | ...... | ...... | ...... | ...... | 4 | 3 | 1 | ...... | ...... |
| Face fracture | 1 | ...... | ...... | ...... | ...... | 1 | ...... | 1 | ...... | ...... |
| Neck | 1 | 2 | ...... | ...... | ...... | 3 | 1 | ...... | 1 | 1 |
| Spine fracture | 2 | ...... | ...... | ...... | ...... | 2 | 1 | 1 | ...... | ...... |
| Thorax, penetrating | 2 | 2 | 1 | 1 | ...... | 6 | 1 | 1 | 4 | ...... |
| Abdomen, penetrating | 2 | 7 | ...... | ...... | 1 | 10 | 1 | 1 | 5 | 3 |
| Thigh, flesh | ...... | 1 | ...... | ...... | ...... | 1 | ...... | ...... | 1 | ...... |
| Kneejoint | ...... | ...... | 1 | ...... | ...... | 1 | ...... | ...... | 1 | ...... |
| Leg, flesh | ...... | ...... | 1 | ...... | ...... | 1 | ...... | ...... | 1 | ...... |
| Total | 12 | 12 | 3 | 1 | 1 | 29 | 7 | 5 | 13 | 4 |

### *Gunshot wounds received in action.*

VOLUNTEER ARMY, 1898.

| Character and location of wound. | Nature of missile. | | | | | | | Disposition. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mauser. | Remington. | Bullets, other. | Shell. | Shrapnel. | Piece of steel. | Total. | Duty. | Certificate of disability. | Died. | Discharged by order. | Mustered out. | Deaths, other causes. | Total. |
| Head: | | | | | | | | | | | | | | |
| Flesh | 13 | .... | 12 | 2 | 2 | .... | 29 | 26 | .... | .... | .... | 2 | 1 | 29 |
| Fracture | 6 | .... | 1 | .... | .... | .... | 7 | ...... | .... | 4 | .... | 2 | 1 | 7 |
| Face: | | | | | | | | | | | | | | |
| Flesh | 4 | .... | .... | 2 | 1 | .... | 7 | 6 | .... | .... | .... | 1 | .... | 7 |
| Fracture | ...... | .... | 5 | .... | .... | .... | 5 | 3 | .... | 1 | 1 | .... | .... | 5 |
| Neck | 5 | .... | 4 | .... | .... | .... | 9 | 6 | .... | 1 | .... | 2 | .... | 9 |
| Spine, fracture | 1 | .... | 1 | .... | .... | .... | 2 | ...... | .... | 2 | .... | .... | .... | 2 |
| Thorax: | | | | | | | | | | | | | | |
| Nonpenetrating | 9 | .... | 3 | 1 | 1 | .... | 14 | 10 | .... | .... | .... | 3 | 1 | 14 |
| Penetrating | 14 | .... | 8 | .... | .... | .... | 22 | 9 | 1 | 2 | .... | 10 | .... | 22 |
| Abdomen: | | | | | | | | | | | | | | |
| Nonpenetrating | 2 | .... | .... | 1 | .... | .... | 3 | 3 | .... | .... | .... | .... | .... | 3 |
| Penetrating | 2 | .... | 2 | .... | .... | .... | 4 | 2 | .... | 2 | .... | .... | .... | 4 |
| Back and hip, flesh | 6 | .... | 7 | .... | .... | .... | 13 | 9 | .... | .... | .... | 4 | .... | 13 |
| Perineum, genital and urinary organs | 2 | .... | 1 | .... | .... | .... | 3 | 2 | .... | .... | 1 | .... | .... | 3 |
| Shoulder: | | | | | | | | | | | | | | |
| Flesh | 18 | .... | 12 | 2 | 1 | .... | 33 | 26 | 1 | .... | .... | 5 | 1 | 33 |
| Fracture, clavicle or scapula | ...... | .... | 2 | .... | .... | .... | 2 | 1 | .... | .... | .... | 1 | .... | 2 |
| Arm: | | | | | | | | | | | | | | |
| Flesh | 12 | .... | 17 | 1 | 1 | .... | 31 | 23 | 1 | .... | 1 | 6 | .... | 31 |
| Fracture | 3 | .... | .... | .... | 1 | 1 | 5 | 2 | .... | .... | .... | 3 | .... | 5 |
| Elbow joint | ...... | .... | 1 | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | 1 |
| Forearm: | | | | | | | | | | | | | | |
| Flesh | 7 | .... | 9 | .... | 2 | .... | 18 | 16 | .... | .... | .... | 2 | .... | 18 |
| Fracture | 4 | .... | 3 | 1 | .... | .... | 8 | 2 | .... | .... | .... | 6 | .... | 8 |
| Hand, flesh | 10 | .... | 13 | .... | 1 | .... | 24 | 20 | 2 | .... | .... | 2 | .... | 24 |
| Carpus and metacarpus, fracture | 1 | .... | 1 | .... | .... | .... | 2 | 1 | .... | .... | .... | 1 | .... | 2 |
| Fingers, fracture | 3 | .... | 6 | .... | .... | .... | 9 | 3 | .... | .... | .... | 6 | .... | 9 |
| Thigh: | | | | | | | | | | | | | | |
| Flesh | 19 | 2 | 21 | 1 | 2 | .... | 45 | 37 | .... | .... | .... | 8 | .... | 45 |
| Fracture, upper third | 2 | .... | 1 | .... | .... | .... | 3 | 1 | 1 | .... | .... | 1 | .... | 3 |
| Fracture, middle third | 3 | .... | 1 | .... | .... | .... | 4 | 2 | .... | .... | .... | 2 | .... | 4 |
| Fracture, lower third | ...... | .... | .... | 1 | .... | .... | 1 | ...... | 1 | .... | .... | .... | .... | 1 |
| Kneejoint | 1 | .... | 3 | .... | 1 | .... | 5 | 4 | .... | .... | .... | 1 | .... | 5 |
| Leg: | | | | | | | | | | | | | | |
| Flesh | 9 | .... | 12 | 2 | 1 | .... | 24 | 16 | .... | .... | .... | 8 | .... | 24 |
| Fracture | 5 | .... | .... | .... | .... | .... | 5 | 1 | 1 | .... | .... | 3 | .... | 5 |
| Foot, flesh | 6 | 1 | 7 | .... | .... | .... | 14 | 12 | 1 | .... | .... | 1 | .... | 14 |
| Tarsus and metatarsus, fracture | 1 | .... | 1 | 1 | .... | .... | 3 | 2 | .... | .... | .... | 1 | .... | 3 |
| Unknown | ...... | .... | 7 | .... | .... | .... | 7 | 4 | .... | .... | .... | 3 | .... | 7 |
| Total | 168 | 3 | 161 | 15 | 14 | 1 | 362 | 250 | 9 | 12 | 3 | 84 | 4 | 362 |

## *Gunshot wounds other than battle wounds.*

### VOLUNTEER ARMY, 1898.

| Character and location of wound. | How received. |  |  |  |  | Nature of missile. |  |  |  |  |  |  | Disposition. |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | In line of duty. | Not in line of duty. | Suicidal. | Homicidal. | Total. | Krag-Jörgensen. | Bullets, other. | Revolver. | Small shot. | Shell. | Shrapnel. | Total. | Duty. | Certificate of disability. | Died. | Discharged by order. | Mustered out. | Total. |
| Head: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Flesh | 3 | 2 |  |  | 5 |  | 5 |  |  |  |  | 5 | 5 |  |  |  |  | 5 |
| Fracture |  | 1 |  |  | 1 |  |  | 1 |  |  |  | 1 | 1 |  |  |  |  | 1 |
| Face: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Flesh | 4 |  |  |  | 4 |  | 4 |  |  |  |  | 4 | 4 |  |  |  |  | 4 |
| Fracture | 1 |  |  |  | 1 |  | 1 |  |  |  |  | 1 |  | 1 |  |  |  | 1 |
| Neck | 3 | 1 |  |  | 4 |  | 2 | 2 |  |  |  | 4 | 2 |  | 2 |  |  | 4 |
| Thorax: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Nonpenetrating | 9 | 2 |  |  | 11 |  | 11 |  |  |  |  | 11 | 10 |  |  |  | 1 | 11 |
| Penetrating | 8 | 1 | 1 |  | 10 |  | 10 |  |  |  |  | 10 | 2 | 2 | 4 |  | 2 | 10 |
| Abdomen: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Nonpenetrating | 1 | 1 |  |  | 2 |  | 2 |  |  |  |  | 2 | 2 |  |  |  |  | 2 |
| Penetrating | 7 |  |  | 1 | 8 |  | 5 | 3 |  |  |  | 8 |  |  | 8 |  |  | 8 |
| Back and hip, flesh | 8 | 1 |  |  | 9 |  | 8 | 1 |  |  |  | 9 | 9 |  |  |  |  | 9 |
| Perineum, genital and urinary organs | 3 |  |  |  | 3 |  | 2 | 1 |  |  |  | 3 | 2 |  |  |  | 1 | 3 |
| Shoulder: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Flesh | 7 |  |  |  | 7 |  | 6 | 1 |  |  |  | 7 | 6 |  |  |  | 1 | 7 |
| Arm: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Flesh | 5 | 2 |  |  | 7 |  | 6 |  | 1 |  |  | 7 | 7 |  |  |  |  | 7 |
| Fracture | 4 |  |  |  | 4 |  | 3 | 1 |  |  |  | 4 | 3 | 1 |  |  |  | 4 |
| Elbow joint | 1 |  |  |  | 1 |  | 1 |  |  |  |  | 1 | 1 |  |  |  |  | 1 |
| Forearm: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Flesh | 10 | 2 |  |  | 12 |  | 11 | 1 |  |  |  | 12 | 11 |  |  |  | 1 | 12 |
| Fracture | 4 |  |  |  | 4 |  | 4 |  |  |  |  | 4 | 1 | 2 |  |  | 1 | 4 |
| Wrist joint |  | 1 |  |  | 1 |  | 1 |  |  |  |  | 1 | 1 |  |  |  |  | 1 |
| Hand, flesh | 30 | 2 |  |  | 32 | 1 | 19 | 10 | 1 | 1 |  | 32 | 29 | 1 |  | 1 | 1 | 32 |
| Carpus and metacarpus, fracture | 1 |  |  |  | 1 |  | 1 |  |  |  |  | 1 | 1 |  |  |  |  | 1 |
| Fingers, fracture | 15 | 1 |  |  | 16 |  | 12 | 2 |  | 1 | 1 | 16 | 11 | 5 |  |  |  | 16 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thigh: | | | | | | | | | | | | | | | | | | |
| Flesh | 21 | 3 | ...... | ...... | 24 | ...... | 16 | 8 | ...... | ...... | ...... | 24 | 22 | ...... | 1 | 1 | ...... | 24 |
| Fracture middle third | 1 | ...... | ...... | ...... | 1 | ...... | 1 | ...... | ...... | ...... | ...... | 1 | ...... | 1 | ...... | ...... | ...... | 1 |
| Kneejoint | 2 | 2 | ...... | ...... | 4 | ...... | 3 | 1 | ...... | ...... | ...... | 4 | 2 | 1 | 1 | ...... | ...... | 4 |
| Leg: | | | | | | | | | | | | | | | | | | |
| Flesh | 32 | 2 | ...... | ...... | 34 | ...... | 32 | 1 | ...... | 1 | ...... | 34 | 30 | 1 | 1 | ...... | 2 | 34 |
| Fracture | 1 | 1 | ...... | ...... | 2 | ...... | 1 | 1 | ...... | ...... | ...... | 2 | ...... | 1 | ...... | 1 | ...... | 2 |
| Foot, flesh | 18 | 3 | ...... | ...... | 21 | ...... | 17 | 4 | ...... | ...... | ...... | 21 | 17 | 1 | ...... | 1 | 2 | 21 |
| Tarsus and metatarsus, fracture | 2 | ...... | ...... | ...... | 2 | ...... | ...... | 2 | ...... | ...... | ...... | 2 | 2 | ...... | ...... | ...... | ...... | 2 |
| Toes, fracture | 3 | ...... | ...... | ...... | 3 | ...... | 3 | ...... | ...... | ...... | ...... | 3 | 3 | ...... | ...... | ...... | ...... | 3 |
| Unknown | 4 | ...... | ...... | ...... | 4 | ...... | 4 | ...... | ...... | ...... | ...... | 4 | 3 | ...... | ...... | ...... | 1 | 4 |
| Total | 208 | 28 | 1 | 1 | 238 | 1 | 191 | 40 | 2 | 3 | 1 | 238 | 187 | 17 | 17 | 4 | 13 | 238 |

### *All gunshot wounds.*

### VOLUNTEER ARMY, 1898.

| Character and location of wound. | How received. | | | | | | Nature of missile. | | | | | | | | | | Disposition. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Not in action. | | | | | | | | | | | | | | | | | | | | | |
| | In action. | In line of duty. | Not in line of duty. | Suicidal. | Homicidal. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. | Shotgun. | Shell. | Shrapnel. | Piece of steel. | Total. | Duty. | Certificate of disability. | Died. | Discharged by order. | Mustered out. | Deaths, other causes. | Total. |
| Head: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 29 | 3 | 2 | .... | .... | 34 | 13 | .... | .... | 17 | .... | .... | 2 | 2 | .... | 34 | 31 | .... | .... | .... | 2 | 1 | 34 |
| Fracture | 7 | .... | 1 | .... | .... | 8 | 6 | .... | .... | 1 | 1 | .... | .... | .... | .... | 8 | 1 | .... | 4 | .... | 2 | 1 | 8 |
| Face: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 7 | 4 | .... | .... | .... | 11 | 4 | .... | .... | 4 | .... | .... | 2 | 1 | .... | 11 | 10 | .... | .... | .... | 1 | .... | 11 |
| Fracture | 5 | 1 | .... | .... | .... | 6 | .... | .... | .... | 6 | .... | .... | .... | .... | .... | 6 | 3 | 1 | 1 | 1 | .... | .... | 6 |
| Neck | 9 | 3 | 1 | .... | .... | 13 | 5 | .... | .... | 6 | 2 | .... | .... | .... | .... | 13 | 8 | .... | 3 | .... | 2 | .... | 13 |
| Spine, fracture | 2 | .... | .... | .... | .... | 2 | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | 2 | .... | .... | 2 | .... | .... | .... | 2 |
| Thorax: | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 14 | 9 | 2 | .... | .... | 25 | 9 | .... | .... | 14 | .... | .... | 1 | 1 | .... | 25 | 20 | .... | .... | .... | 4 | 1 | 25 |
| Penetrating | 22 | 8 | 1 | 1 | .... | 32 | 14 | .... | .... | 18 | .... | .... | .... | .... | .... | 32 | 11 | 3 | 6 | .... | 12 | .... | 32 |
| Abdomen: | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 3 | 1 | 1 | .... | .... | 5 | 2 | .... | .... | 2 | .... | .... | 1 | .... | .... | 5 | 5 | .... | .... | .... | .... | .... | 5 |
| Penetrating | 4 | 7 | .... | .... | 1 | 12 | 2 | .... | .... | 7 | 3 | .... | .... | .... | .... | 12 | 2 | .... | 10 | .... | .... | .... | 12 |
| Back and hip, flesh | 13 | 8 | 1 | .... | .... | 22 | 6 | .... | .... | 15 | 1 | .... | .... | .... | .... | 22 | 18 | .... | .... | .... | 4 | .... | 22 |
| Perineum, genital and urinary organs | 3 | 3 | .... | .... | .... | 6 | 2 | .... | .... | 3 | 1 | .... | .... | .... | .... | 6 | 4 | .... | .... | 1 | 1 | .... | 6 |
| Shoulder: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 33 | 7 | .... | .... | .... | 40 | 18 | .... | .... | 18 | 1 | .... | 2 | 1 | .... | 40 | 32 | 1 | .... | .... | 6 | 1 | 40 |
| Fracture clavicle or scapula | 2 | .... | .... | .... | .... | 2 | .... | .... | .... | 2 | .... | .... | .... | .... | .... | 2 | 1 | .... | .... | .... | 1 | .... | 2 |
| Arm: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 31 | 5 | 2 | .... | .... | 38 | 12 | .... | .... | 23 | .... | 1 | 1 | 1 | .... | 38 | 30 | 1 | .... | 1 | 6 | .... | 38 |
| Fracture | 5 | 4 | .... | .... | .... | 9 | 3 | .... | .... | 3 | 1 | .... | .... | 1 | 1 | 9 | 5 | 1 | .... | .... | 3 | .... | 9 |
| Elbow joint | 1 | 1 | .... | .... | .... | 2 | .... | .... | .... | 2 | .... | .... | .... | .... | .... | 2 | 2 | .... | .... | .... | .... | .... | 2 |
| Forearm: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 18 | 10 | 2 | .... | .... | 30 | 7 | .... | .... | 20 | 1 | .... | .... | 2 | .... | 30 | 27 | .... | .... | .... | 3 | .... | 30 |
| Fracture | 8 | 4 | .... | .... | .... | 12 | 4 | .... | .... | 7 | .... | .... | 1 | .... | .... | 12 | 3 | 2 | .... | .... | 7 | .... | 12 |
| Wrist joint | .... | .... | 1 | .... | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | 1 |
| Hand, flesh | 24 | 30 | 2 | .... | .... | 56 | 10 | .... | 1 | 32 | 10 | 1 | 1 | 1 | .... | 56 | 49 | 3 | .... | 1 | 3 | .... | 56 |
| Carpus and metacarpus, fracture | 2 | 1 | .... | .... | .... | 3 | 1 | .... | .... | 2 | .... | .... | .... | .... | .... | 3 | 2 | .... | .... | .... | 1 | .... | 3 |
| Fingers, fracture | 9 | 15 | 1 | .... | .... | 25 | 3 | .... | .... | 18 | 2 | .... | 1 | 1 | .... | 25 | 14 | 5 | .... | .... | 6 | .... | 25 |

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Thigh:** | | | | | | | | | | | | | | | | | | | | | | |
| **Flesh** | 45 | 21 | 8 | .... | .... | 69 | 19 | 2 | .... | 37 | 8 | .... | 1 | 2 | .... | 69 | 59 | ...... | [1] 1 | 1 | 8 | .... | 69 |
| **Fracture upper third** | 3 | ...... | .... | .... | .... | 3 | 2 | .... | .... | 1 | .... | .... | .... | .... | .... | 3 | 1 | 1 | .... | .... | 1 | .... | 3 |
| **Fracture middle third** | 4 | 1 | .... | .... | .... | 5 | 3 | .... | .... | 2 | .... | .... | .... | .... | .... | 5 | 2 | 1 | .... | .... | 2 | .... | 5 |
| **Fracture lower third** | 1 | ...... | .... | .... | .... | 1 | ...... | .... | .... | ...... | .... | .... | 1 | .... | .... | 1 | ...... | 1 | .... | .... | ...... | .... | 1 |
| **Kneejoint** | 5 | 2 | 2 | .... | .... | 9 | 1 | .... | .... | 6 | 1 | .... | .... | 1 | .... | 9 | 6 | 1 | [2] 1 | .... | 1 | .... | 9 |
| **Leg:** | | | | | | | | | | | | | | | | | | | | | | |
| **Flesh** | 24 | 32 | 2 | .... | .... | 58 | 9 | .... | .... | 44 | 1 | .... | 3 | 1 | .... | 58 | 46 | 1 | [3] 1 | .... | 10 | .... | 58 |
| **Fracture** | 5 | 1 | 1 | .... | .... | 7 | 5 | .... | .... | 1 | 1 | .... | .... | .... | .... | 7 | 1 | 2 | .... | 1 | 3 | .... | 7 |
| **Foot, flesh** | 14 | 18 | 3 | .... | .... | 35 | 6 | 1 | .... | 24 | 4 | .... | .... | .... | .... | 35 | 29 | 2 | .... | 1 | 3 | .... | 35 |
| **Tarsus and metatarsus, fracture** | 3 | 2 | .... | .... | .... | 5 | 1 | .... | .... | 1 | 2 | .... | 1 | .... | .... | 5 | 4 | ...... | .... | .... | 1 | .... | 5 |
| **Toes, fracture** | ...... | 3 | .... | .... | .... | 3 | ...... | .... | .... | 3 | .... | .... | .... | .... | .... | 3 | 3 | ...... | .... | .... | ...... | .... | 3 |
| **Unknown** | 7 | 4 | .... | .... | .... | 11 | ...... | .... | .... | 11 | .... | .... | .... | .... | .... | 11 | 7 | ...... | .... | .... | 4 | .... | 11 |
| Total | 362 | 208 | 28 | 1 | 1 | 600 | 168 | 3 | 1 | 352 | 40 | 2 | 18 | 15 | 1 | 600 | 437 | 26 | 29 | 7 | 97 | 4 | 600 |

[1] Shot through left thigh, accidentally, caliber .45, August 15; died next day.
[2] Shot through left knee, while resisting arrest, caliber .45, September 27; died October 15.
[3] Shot through left leg, while intoxicated, November 11; died of tetanus November 24.

*Surgical intervention and results, with missile.*

VOLUNTEER ARMY, 1898.

| Character and location of wounds. | Operation. | Results. |  | Missile. |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|
|  |  | Recovered. | Died. | Mauser. | Bullet. | Revolver. | Shell. | Shrapnel. | Piece of steel. |
| Face, fracture | Right lingual artery ligated |  | 1 |  | 1 |  |  |  |  |
| Spine, fracture | Spicula of bone removed |  | 1 |  | 1 |  |  |  |  |
| Thorax, penetrating | Resection fifth rib for empyema | 1 |  | 1 |  |  |  |  |  |
| Abdomen, penetrating | Abdominal incision |  | 1 |  |  | 1 |  |  |  |
| Do | Resection of the intestine |  | 1 |  |  | 1 |  |  |  |
| Back and hip, flesh | Fragment of metal discovered in lumbar region by X-ray; missile not removed. | 1 |  |  | 1 |  |  |  |  |
| Arm, fracture | 2 amputations | 2 |  |  | 2 |  |  |  |  |
| Do | Fragments of bone removed | 1 |  |  |  |  |  |  | 1 |
| Do | Incision for drainage | 1 |  |  |  |  |  | 1 |  |
| Forearm, fracture | Amputation | 1 |  |  |  |  | 1 |  |  |
| Do | do | 1 |  |  | 1 |  |  |  |  |
| Do | Crushed bone removed | 1 |  |  | 1 |  |  |  |  |
| Do | Bullet discovered by X-ray and removed. | 1 |  | 1 |  |  |  |  |  |
| Do | Bullet removed | 1 |  | 1 |  |  |  |  |  |
| Fingers, fracture | 9 amputations | 9 |  |  | 9 |  |  |  |  |
| Do | 1 amputation | 1 |  |  |  |  | 1 |  |  |
| Do | do | 1 |  |  |  | 1 |  |  |  |
| Thigh: |  |  |  |  |  |  |  |  |  |
| Fracture, upper third | Bullet removed | 1 |  | 1 |  |  |  |  |  |
| Fracture, middle third | Bullet and dead bone removed | 1 |  | 1 |  |  |  |  |  |
| Do | Spiculæ of bone and 2 pieces of lead removed. | 1 |  |  | 1 |  |  |  |  |
| Fracture, lower third | Amputation and reamputation | 1 |  |  |  |  | 1 |  |  |
| Knee joint | Knee joint opened and drained | 1 |  |  |  |  |  | 1 |  |
| Leg, fracture | Amputation | 1 |  |  | 1 |  |  |  |  |
| Tarsus and metatarsus, fracture. | do | 1 |  |  |  |  | 1 |  |  |
| Toes, fracture | 3 amputations | 3 |  |  | 3 |  |  |  |  |

*Regular and Volunteer armies, 1899.*—During the year 1899 there were reported from the Army, regulars and volunteers, 2,276 cases of gunshot injury, with 149 deaths, or 6.5 per cent, resulting from the wounds and 4 deaths from causes other than the wounds; 1,714 were returned to duty, 180 were discharged on certificates of disability, 134 by order, and 80 by muster out or expiration of term of service, while 15 remained on sick report at the date of the latest reports.

In addition to these cases, there were killed by gunshot 391 men whose names were not on sick report at the time of their death.

Of the 2,276 cases, 1,759 were wounds received in action; 517 were not battle wounds, but 411 of them were received in the line of duty. One hundred and sixteen of the battle wounds, or 6.6 per cent, had a fatal ending and 136 terminated in discharge for disability.

Of the 2,276 cases, 1,016 occurred among the regular troops, 712 in action, 232 in line of duty, and 72 not in the line of duty. Four of the last-mentioned cases were suicidal and 3 homicidal.

Of the 1,016 cases among the regular troops, 795 were returned to duty, 59 died from effects of their wounds and 3 from other causes, 129 were discharged for disability, 18 by order, and 3 by expiration of term of service, while 9 remained on sick report at the date of last report.

Of the 2,276 cases, 1,260 occurred among the volunteer troops, 1,047 in battle, 179 in the line of duty and 34 not in the line of duty. Only one of the last-mentioned cases was suicidal, none homicidal.

Of the 1,260 cases among the volunteer troops, 919 were returned to duty; 90 died from the effects of their wounds and 1 from other causes, 51 were discharged on certificates of disability, 116 by order, and 77 by muster out, while 6 remained on sick report at the date of last report.

Of the 391 killed by gunshot injury, 333 died in battle, 28 in the line of duty, and 30 not in the line of duty. Fifteen of those last mentioned were cases of suicide and 13 cases of homicide.

Of the 391 killed, 189 were regulars, and of these 148 died in battle, 17 in the line of duty, and 24 not in the line of duty. Ten of those last mentioned were cases of suicide and 12 were cases of homicide.

Of the 391 killed, 202 were volunteers, of whom 185 died in battle, 11 in the line of duty, 5 by suicide, and 1 by homicide.

The site and character of the fatal injury was not reported in 22 of the 391 cases. Of 369 cases in which the location of the injury is specified, 145, or 39.3 per cent, were shot in the head; 131, or 35.5 per cent, in the thorax; 54, or 14.6 per cent, in the abdomen, and 28, or 7.6 per cent, in the neck. The following tabulations show the reported nature of these immediately fatal injuries:

*Killed by gunshot.*

REGULAR AND VOLUNTEER ARMIES, 1899.

| Character and location of wound. | How received. | | | | | | Nature of missile. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Not in action. | | | | | In action. | | | | | | Not in action. | | | | |
| | In action. | In line of duty. | Not in line of duty. | Suicide. | Homicide. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Shell. | Cannon projectile. | Krag-Jörgensen. | Bullets, other. | Revolver. | Shotgun. | Explosion of gun cotton. |
| Head, fracture | 126 | 6 | 1 | 11 | 1 | 145 | 33 | 20 | .... | 72 | ... | 1 | 6 | 9 | 4 | ... | .... |
| Face, fracture | 1 | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Neck | 24 | 2 | .... | .... | 2 | 28 | 7 | 3 | .... | 14 | ... | .... | 1 | 1 | 2 | ... | .... |
| Spine, fracture | ..... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... |
| Thorax, penetrating | 108 | 13 | 1 | 1 | 8 | 131 | 39 | 23 | 1 | 45 | ... | .... | 6 | 11 | 6 | ... | .... |
| Abdomen, penetrating | 51 | 2 | .... | .... | 1 | 54 | 16 | 8 | .... | 27 | ... | .... | .... | 2 | 1 | ... | .... |
| Pelvis, fracture | 1 | 1 | .... | .... | .... | 2 | 1 | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... |
| Thigh: | | | | | | | | | | | | | | | | | |
| Flesh | 3 | 1 | .... | .... | .... | 4 | 1 | .... | .... | 2 | ... | .... | 1 | .... | .... | .... | .... |
| Fracture, upper third | 2 | .... | .... | .... | .... | 2 | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... |
| Leg, fracture | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... |
| Unknown | 16 | 2 | .... | 3 | 1 | 22 | 1 | .... | .... | 15 | ... | .... | .... | 3 | 2 | ... | 1 |
| Total | 333 | 28 | 2 | 15 | 13 | 391 | 99 | 55 | 1 | 175 | 2 | 1 | 14 | 27 | 15 | 1 | 1 |

REGULARS, 1899.

| Character and location of wound. | In action. | In line of duty. | Not in line of duty. | Suicide. | Homicide. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Shell. | Cannon projectile. | Krag-Jörgensen. | Bullets, other. | Revolver. | Shotgun. | Explosion of gun cotton. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Head, fracture | 60 | 3 | 1 | 7 | 1 | 72 | 17 | 15 | .... | 27 | ... | 1 | 4 | 5 | 3 | ... | .... |
| Face, fracture | 1 | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Neck | 10 | 2 | .... | .... | 2 | 14 | 5 | 2 | .... | 3 | ... | .... | 1 | 1 | 2 | ... | .... |
| Spine, fracture | ..... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... |
| Thorax, penetrating | 50 | 8 | 1 | 1 | 8 | 68 | 20 | 18 | 1 | 11 | ... | .... | 6 | 8 | 4 | ... | .... |
| Abdomen, penetrating | 22 | 1 | .... | .... | 1 | 24 | 7 | 5 | .... | 10 | ... | .... | .... | 1 | 1 | ... | .... |
| Pelvis, fracture | 1 | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Thigh, fracture upper third | 2 | .... | .... | .... | .... | 2 | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... |
| Leg, fracture | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... |
| Unknown | 1 | 2 | .... | 2 | .... | 5 | 1 | .... | .... | .... | ... | .... | .... | 1 | 2 | ... | 1 |
| Total | 148 | 17 | 2 | 10 | 12 | 189 | 52 | 41 | 1 | 51 | 2 | 1 | 11 | 16 | 12 | 1 | 1 |

*Killed by gunshot*—Continued.

VOLUNTEERS, 1899.

| Character and location of wound. | How received. | | | | | | Nature of missile. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Not in action. | | | | | In action. | | | | | | Not in action. | | | | |
| | In action. | In line of duty. | Not in line of duty. | Suicide. | Homicide. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Shell. | Cannon projectile. | Krag-Jörgensen. | Bullets, other. | Revolver. | Shotgun. | Explosion of gun cotton. |
| Head, fracture | 66 | 3 | .... | 4 | .... | 73 | 16 | 5 | .... | 45 | .... | .... | 2 | 4 | 1 | .... | .... |
| Neck | 14 | .... | .... | .... | .... | 14 | 2 | 1 | .... | 11 | .... | .... | .... | .... | .... | .... | .... |
| Thorax, penetrating | 58 | 5 | .... | .... | .... | 63 | 19 | 5 | .... | 34 | .... | .... | .... | 3 | 2 | .... | .... |
| Abdomen, penetrating | 29 | 1 | .... | .... | .... | 30 | 9 | 3 | .... | 17 | .... | .... | .... | 1 | .... | .... | .... |
| Pelvis, fracture | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... |
| Thigh, flesh | 3 | 1 | .... | .... | .... | 4 | 1 | .... | .... | 2 | .... | .... | 1 | .... | .... | .... | .... |
| Unknown | 15 | .... | .... | 1 | 1 | 17 | .... | .... | .... | 15 | .... | .... | .... | 2 | .... | .... | .... |
| Total | 185 | 11 | .... | 5 | 1 | 202 | 47 | 14 | .... | 124 | .... | .... | 3 | 11 | 3 | .... | .... |

Of the 2,276 gunshot wounds on the sick reports of the Army, regulars and volunteers, in 1899, the site of injury in 8 cases is not stated. In 2,268 cases in which the injured part is specified, the head, face, or neck was wounded in 257 cases, or 11.4 per cent of the whole number; the trunk in 402 cases, or 17.7 per cent; the upper extremity in 763 cases, or 33.6 per cent, and the lower extremity in 846 cases, or 37.3 per cent. But if the 369 cases of death from gunshot in which the site of the fatal wound is specified be added to these 2,268 cases, we have a total of 2,637 cases of gunshot injury, of which 431 injuries of the head, face, and neck constituted 16.4 per cent of the total; 590 of the trunk, 22.4 per cent; 763 of the upper extremity, 28.9 per cent, and 853 of the lower extremity 32.3 per cent.

But a more accurate view of the relative liability of various parts of the body to gunshot injury may be obtained if to the gunshot injuries received in 1899 be added those incurred by the regular and volunteer troops during the year 1898. This gives a total of 4,919 injuries, 845 of which were fatal. The aggregate number of cases in which the location and character of the injury was stated amounted to 4,756, with 757 deaths. The following tabulation shows the distribution of these wounds according as the head, face, and neck, the trunk, or the extremities were the parts injured:

*Liability of various parts of the body to gunshot injury, and the dangers resulting from such wounds, years 1898 and 1899.*

| Site of injury. | Cases. | | Deaths. | | |
|---|---|---|---|---|---|
| | Number. | Per cent of all cases of known sites. | Number. | Per cent of cases of local injury. | Per cent of all cases of known sites. |
| Head, face, and neck | 726 | 15.26 | 298 | 41.05 | 6.27 |
| Trunk | 1,065 | 22.39 | 409 | 38.41 | 8.60 |
| Upper extremities | 1,410 | 29.65 | 9 | .64 | .19 |
| Lower extremities | 1,555 | 32.70 | 41 | 2.64 | .86 |
| Total known sites | 4,756 | 100.00 | 757 | 15.92 | 15.92 |
| Not stated | 163 | ............ | 88 | ............ | ............ |
| Aggregate | 4,919 | ............ | 845 | ............ | ............ |

Among the 2,276 gunshot wounds entered on the registers during the calendar year 1899 were 197 injuries of the head and face; 141 of these were flesh wounds, 29 fractures of the cranial bones, and 27 fractures of the bones of the face. No flesh wound was fatal, but the eye had to be enucleated in one of the cases. Fifteen of the patients with cranial fractures died (1 of these in 1900) and 5 recovered, so as to be able to resume their military duties. Depressed bone was removed in 2 cases, one of which was fatal. Enucleation of the eye was performed in 1 case, and the wound is reported as having been closed by sutures in 1 case. Of those who suffered fractures of the facial bones 7 resumed their military duties and 2 died. The recorded surgery in fractures of these bones consisted of the removal of fragments of bone and of portions of a Mauser bullet in 1 case, which ended fatally; the removal of a bullet through the floor of the mouth in 1 case, and enucleation of the eye in 1 case.

Of 60 cases of wound of the neck 41 were returned to duty and 12 died. The only surgical work recorded was the removal of the missile in 2 cases.

Eleven fractures of the spine were reported—8 fatal. The missile was removed in 1 case which recovered and in 1 case which was fatal. Laminectomy was performed in 1 case, which also was fatal. See page 836.

The thorax was injured in 197 cases, 84 nonpenetrating and 113 penetrating wounds. Of the nonpenetrating wounds 1 proved fatal after an operation for traumatic aneurism and 1 recovered after a ligation of the subclavian artery. Of the penetrating wounds 36 cases, or 31.9 per cent of the penetrations, were fatal. The bullet was removed in 1 case which ended fatally and in 6 cases which recovered. The seventh rib was resected in 1 case, and the axillary artery was tied in 1 case with a favorable result.

If the penetrating wounds of the thorax reported in 1898 be added to those just mentioned, the fatal cases are found to constitute 27 per cent of the aggregate. Thus the regular troops in 1898 had 53 cases, 13 fatal, and the volunteer troops 32 cases, 6 fatal, while, as just stated, the regulars and volunteers in 1899 reported 113 cases, 36 fatal. The aggregate number of deaths, 55, forms 27 per cent of the aggregate number of cases, 198.

Of 98 wounds of the abdomen in 1899, 38 were nonpenetrating and 60 penetrating wounds. None of the former was fatal, but 41 of the latter died, constituting 68.3 per cent of the whole number of penetrating wounds. Surgical intervention in these penetrating abdominal wounds included the removal of the missile in 2 cases, the discovery of the bullet by the X-rays in 1 case, and laparotomy in 5 cases, 4 of which were fatal. For the successful case see page 836. In 10 of the 60 penetrating wounds the injured men were able to return to military duty, and in 8 other cases the patients survived the injury.

If the penetrating wounds of the abdomen reported in 1898 be added to those just mentioned, the fatal cases are found to constitute 70 per cent of the aggregate. Thus the regular troops in 1898 had 44 cases, 30 fatal, and the volunteer troops 12 cases, 10 fatal, while, as just stated, the regulars and volunteers in 1899 had 60 cases, 41 fatal. The aggregate number of deaths, 81, forms 70 per cent of the aggregate number of cases, 116.

In one of the gunshot wounds of 1899 the bladder was sutured. This case, which was fatal, is tabulated among wounds of the genito-urinary organs.

One flesh wound of the shoulder proved fatal from hemorrhage from the axillary artery.

The shoulder joint was implicated in 9 cases, 1 fatal; the immediate cause of death not stated.

Of 134 flesh wounds of the arm the patient in 1 case died after amputation at the shoulder joint for injury to the blood vessels. Thirty-two cases of fractured humerus, 3 fatal, were reported. The deaths were due to septic infection after amputation of the arm in 1 case and to axillary hemorrhage in 2 cases, in 1 of which amputation at the shoulder joint was performed for traumatic aneurism and advancing gangrene. Besides this amputation at the shoulder 3 amputations of the arm were performed, 1 of which was fatal from septicæmia, as above stated. A resection of the humerus was performed in one case, and the bullet and fragments of bone were removed in several cases.

In 10 cases in which the elbow joint was injured the only operation recorded was the removal of the bullet and wiring of the fragments of bone in 1 case.

Death from tetanus is recorded in 1 case of flesh wound of the forearm.

In 37 cases of fractured forearm amputation was performed in 2 cases, bullets removed in 2 cases, and pieces of bone removed in 2 cases.

In 21 cases of fractured carpus and metacarpus operations were recorded in 10 cases—in 1 case, which ended fatally, amputation at the shoulder joint for gangrene; in 2 cases, extraction of the bullet; in 1, removal of necrosed bone; in 1, excision of metacarpal bones, and in 5 cases, amputation of the fingers or of the fingers and part of the metacarpal bones.

In 105 cases of fracture of the fingers, 54 amputations were performed.

The hip joint was reported injured only in 1 case; pieces of bone were removed, and the patient on recovery was discharged as unfit for further military duty.

In 362 flesh wounds of the thigh 7 cases ended fatally—1 from septic infection; 1 from gangrene; 2 from hemorrhage, in 1 of which the femoral artery was ligated; 1 is said to have died in the operating room, while in 2 cases no reference is made to the immediate cause of death. The bullet was discovered by the X-rays and removed in 1 case; the femoral artery was ligated in 2 cases, the patient recovering in 1 case, a Mauser wound, and dying in the other, a Remington wound; the leg was amputated in 1 case for gangrene, resulting from injury to the popliteal artery, and the thigh in another also for gangrene, both ending favorably.

Seventeen fractures of the femur in its upper third were recorded, with 3 deaths. The only surgical work reported in connection with these fractures is the removal of the bullet in 3 cases.

Seventeen fractures of the femur in its middle third were recorded, with 2 deaths (1 of the latter having occurred in 1900). The bullet was removed in 1 case and necrosed bone in 1 case; resection was performed in 1 case and amputation (in 1900) in 1 case, which was fatal.

Nine fractures of the lower third of the femur, none fatal, were recorded. The bullet was extracted in 1 case; dead bone was removed and sinuses curetted in 1 case.

In 24 injuries implicating the knee joint, 1 proved fatal, death having occurred in 1900 after amputation of the thigh. The missile was removed in 4 cases and amputation was performed in 1 case, the patient recovering.

In 186 flesh wounds of the leg 1 death was reported from shock following operation for severed tibial artery. In 1 case the missile was discovered by the X-rays and removed, and in 1 case the external popliteal nerve was resected.

The bones of the leg were fractured in 54 cases, 5 fatal. Death resulted from tetanus in 1 case, septic infection in 2 cases; in 1 case the patient is recorded as having died from the effects of wounds received in action, and in 1 case no reference is made to the immediate cause of death. The surgical work reported consisted of the removal of the bullet in 1 case, of the bullet and spiculæ of bone in 1 case, of scales of lead in 1 case, and of the bullet and necrosed bone in 1 case. Formal replacement of fragments is reported in 2 cases and amputation in 4 cases.

One death from tetanus occurred in 120 cases of flesh wound of the foot.

The surgical work on the injuries of the ankle and foot consisted of the removal of bullets, fragments of bone, and of necrosed bone, with amputation of the foot in 2 cases and of the toes in 4 cases.

The following tabulations present the statistical details of the 2,276 gunshot wounds reported from the Regular and Volunteer armies during the year 1899. They consist of five sets, in the following order:

I.—Regulars and volunteers:
  (*a*) All gunshot wounds.
  (*b*) Gunshot wounds received in action.
  (*c*) Gunshot wounds other than battle wounds.
II.—Regulars:
  (*a*) All gunshot wounds.
  (*b*) Gunshot wounds received in action.
  (*c*) Gunshot wounds other than battle wounds.
III.—Volunteers:
  (*a*) All gunshot wounds.
  (*b*) Gunshot wounds received in action.
  (*c*) Gunshot wounds other than battle wounds.
IV.—Gunshot wounds which terminated fatally in:
  (*a*) Regulars and volunteers.
  (*b*) Regulars.
  (*c*) Volunteers.
V.—Surgical operations for gunshot wounds.
  Regulars and volunteers.

## I.—REGULAR AND VOLUNTEER ARMIES, 1899.

### (*a*) *All gunshot wounds.*

| Character and location of wound. | How received. | | | | | | Nature of missile. | | | | | | | | | | | | | | | | Disposition. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Not in action. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | In action. | In line of duty. | Not in line of duty. | Suicidal. | Homicidal. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Jacket of bullet. | Cartridge shell. | Revolver. | Small shot. | Shell. | Canister. | Shrapnel. | Splinter. | Explosion of gun. | Explosion of cartridge. | Explosion of primer. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Expiration of service and muster out. | Death, other causes. | Remaining last report. | Total. |
| **Head:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 84 | 3 | 1 | ... | ... | 88 | 33 | 11 | .... | 38 | 1 | ... | 1 | ... | 1 | ... | ... | 1 | 2 | ... | ... | 88 | 84 | .... | .... | 2 | 2 | .... | .... | 88 |
| Fracture | 25 | 2 | .... | 1 | 1 | 29 | 14 | 6 | .... | 7 | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | 29 | 5 | 4 | 15 | 2 | 1 | 1 | 1 | 29 |
| **Face:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 44 | 7 | 2 | ... | ... | 53 | 18 | 8 | .... | 20 | ... | ... | 2 | ... | 2 | ... | ... | ... | 1 | 2 | ... | 53 | 45 | 2 | .... | 5 | 1 | .... | .... | 53 |
| Fracture | 24 | 1 | 2 | ... | ... | 27 | 13 | 6 | .... | 7 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 27 | 7 | 8 | 2 | 5 | 4 | 1 | .... | 27 |
| **Neck** | 51 | 6 | 3 | ... | ... | 60 | 29 | 11 | 2 | 17 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 60 | 41 | 3 | 12 | 2 | 2 | .... | .... | 60 |
| **Spine, fracture** | 8 | 1 | 2 | ... | ... | 11 | 3 | 3 | 1 | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 11 | ...... | 2 | 8 | .... | 1 | .... | .... | 11 |
| **Thorax:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 61 | 19 | 4 | ... | ... | 84 | 24 | 22 | 2 | 29 | ... | ... | 5 | ... | ... | ... | ... | ... | 1 | 1 | ... | 84 | 74 | 1 | 1 | 3 | 3 | .... | 2 | 84 |
| Penetrating | 95 | 10 | 4 | 3 | 1 | 113 | 48 | 32 | 4 | 27 | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | 113 | 49 | 13 | 36 | 11 | 3 | .... | 1 | 113 |
| **Abdomen:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 33 | 3 | 2 | ... | ... | 38 | 15 | 5 | .... | 16 | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | 38 | 37 | 1 | .... | .... | .... | .... | .... | 38 |
| Penetrating | 49 | 8 | 2 | ... | 1 | 60 | 31 | 9 | 2 | 14 | ... | ... | 4 | ... | ... | ... | ... | ... | ... | ... | ... | 60 | 10 | 4 | 41 | 1 | 3 | .... | 1 | 60 |
| **Pelvis, fracture** | 4 | ..... | .... | ... | ... | 4 | 1 | .... | .... | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 2 | .... | 2 | .... | .... | .... | .... | 4 |
| **Back and hip, flesh** | 74 | 4 | .... | ... | ... | 78 | 34 | 25 | 1 | 13 | ... | ... | 2 | ... | 3 | ... | ... | ... | ... | ... | ... | 78 | 63 | 5 | .... | 8 | 1 | 1 | .... | 78 |
| **Perineum, genital and urinary organs** | 12 | 1 | 1 | ... | ... | 14 | 3 | 4 | .... | 5 | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | 14 | 10 | .... | 3 | .... | 1 | .... | .... | 14 |
| **Shoulder:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 97 | 10 | 4 | ... | ... | 111 | 44 | 28 | 1 | 34 | ... | ... | 1 | ... | 1 | ... | 1 | ... | 1 | ... | ... | 111 | 91 | 4 | 1 | 9 | 5 | 1 | .... | 111 |
| Fracture clavicle or scapula | 3 | ..... | .... | ... | ... | 3 | .... | 1 | .... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 3 | 2 | .... | .... | 1 | .... | .... | .... | 3 |
| Joint | 8 | 1 | .... | ... | ... | 9 | 3 | 4 | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 9 | 4 | 3 | 1 | .... | 1 | .... | .... | 9 |
| **Arm:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 121 | 9 | 4 | ... | ... | 134 | 65 | 24 | 1 | 40 | ... | ... | 3 | ... | ... | ... | ... | 1 | ... | ... | ... | 134 | 115 | 5 | 1 | 9 | 4 | .... | .... | 134 |
| Fracture | 27 | 4 | .... | 1 | ... | 32 | 16 | 10 | 8 | 1 | ... | ... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | 32 | 13 | 10 | 8 | 4 | 2 | .... | .... | 32 |
| **Elbow joint** | 8 | 2 | .... | ... | ... | 10 | 4 | 4 | .... | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 10 | 8 | 5 | .... | 1 | 1 | .... | .... | 10 |
| **Forearm:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 115 | 15 | 2 | ... | ... | 132 | 59 | 27 | 3 | 38 | ... | ... | 3 | ... | 1 | ... | ... | ... | 1 | ... | ... | 132 | 123 | 4 | 1 | 4 | .... | .... | .... | 132 |
| Fracture | 29 | 5 | 3 | ... | ... | 37 | 7 | 15 | 1 | 11 | ... | ... | 1 | ... | ... | ... | 1 | ... | ... | 1 | ... | 37 | 23 | 8 | .... | 4 | 2 | .... | .... | 37 |
| **Wrist joint** | ...... | 2 | .... | ... | ... | 2 | .... | .... | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 2 | 1 | 1 | .... | .... | .... | .... | .... | 2 |
| **Hand, flesh** | 95 | 55 | 17 | ... | ... | 167 | 42 | 18 | 13 | 69 | ... | 1 | 17 | ... | ... | ... | ... | ... | 4 | 2 | 1 | 167 | 150 | 2 | .... | 8 | 8 | .... | .... | 167 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Carpus and metacarpus, fracture | 8 | 10 | 3 | ... | ... | 21 | 2 | 3 | 6 | 7 | ... | ... | 2 | 1 | ... | ... | ... | ... | ... | ... | ... | 21 | 16 | 4 | 1 | ... | ... | ... | ... | 21 |
| Fingers, fracture | 15 | 76 | 14 | ... | ... | 105 | 5 | 5 | 31 | 52 | ... | ... | 11 | 1 | ... | ... | ... | ... | ... | ... | ... | 105 | 82 | 19 | ... | 4 | ... | ... | ... | 105 |
| Hip joint | 1 | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | 1 |
| Thigh: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 321 | 31 | 10 | ... | ... | 362 | 151 | 104 | 6 | 86 | ... | ... | 10 | ... | 4 | ... | 1 | ... | ... | ... | ... | 362 | 294 | 20 | 7 | 22 | 15 | ... | 4 | 362 |
| Fracture upper third | 15 | 2 | ... | ... | ... | 17 | 9 | 6 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 17 | 5 | 2 | 3 | 5 | 2 | ... | ... | 17 |
| Fracture middle third | 16 | ... | 1 | ... | ... | 17 | 12 | 2 | ... | 2 | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | ... | 17 | 4 | 5 | 2 | 3 | 2 | ... | 1 | 17 |
| Fracture lower third | 9 | ... | ... | ... | ... | 9 | 5 | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 9 | 2 | 5 | ... | 1 | ... | ... | 1 | 9 |
| Kneejoint | 22 | 2 | ... | ... | ... | 24 | 10 | 7 | 1 | 6 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 24 | 8 | 8 | 1 | 4 | 3 | ... | ... | 24 |
| Leg: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 145 | 35 | 6 | ... | ... | 186 | 82 | 29 | 7 | 57 | ... | ... | 10 | ... | 1 | ... | ... | ... | ... | ... | ... | 186 | 163 | 8 | 1 | 6 | 8 | ... | ... | 186 |
| Fracture | 44 | 7 | 3 | ... | ... | 54 | 20 | 19 | 3 | 8 | ... | ... | 2 | ... | 2 | ... | ... | ... | ... | ... | ... | 54 | 26 | 12 | 5 | 6 | 5 | ... | ... | 54 |
| Ankle joint | 5 | 1 | ... | ... | ... | 6 | 1 | 2 | 1 | 2 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 6 | 4 | 2 | ... | ... | ... | ... | ... | 6 |
| Foot, flesh | 65 | 49 | 6 | ... | ... | 120 | 33 | 11 | 27 | 40 | ... | ... | 9 | ... | ... | ... | ... | ... | ... | ... | ... | 120 | 100 | 5 | 1 | 8 | 3 | ... | 3 | 120 |
| Tarsus and metatarsus, fracture | 15 | 14 | 1 | ... | ... | 30 | 7 | 5 | 7 | 10 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 30 | 24 | 4 | ... | ... | 1 | ... | 1 | 30 |
| Toes, fracture | 7 | 13 | ... | ... | ... | 20 | 6 | ... | 5 | 8 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 20 | 18 | ... | ... | 1 | 1 | ... | ... | 20 |
| Unknown | 4 | 3 | 1 | ... | ... | 8 | 2 | ... | ... | 5 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | 8 | 7 | ... | 1 | ... | ... | ... | ... | 8 |
| Total | 1,759 | 411 | 98 | 5 | 3 | 2,276 | 851 | 471 | 131 | 682 | 1 | 1 | 98 | 2 | 16 | 1 | 3 | 2 | 10 | 6 | 1 | 2,276 | 1,714 | 180 | 149 | 134 | 80 | 4 | [1]15 | 2,276 |

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[1] On December 31, 1899, there remained on sick report 216 cases, but since that date 134 cases have been returned to duty, 61 discharged on certificates of disability, 1 discharged by order, 2 by expiration of term of service, and 3 died. The cases fatal in 1900 comprised 1 case of kneejoint injury, 1 of the 2 fatal cases of fracture of the middle third of the femur, and 1 of the 15 fatal cases of fracture of the cranium.

## I.—REGULAR AND VOLUNTEER ARMIES, 1899.

### (b) *Gunshot wounds received in action.*

| Character and location of wound. | Nature of missile. | | | | | | | | | | | | | Disposition. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Jacket of bullet. | Cartridge shell. | Shell. | Canister. | Shrapnel. | Splinters. | Explosion of gun. | Explosion of primer. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Expiration of service and muster out. | Death, other causes. | Remaining last report. | Total. |
| **Head:** | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 33 | 11 | .... | 35 | 1 | .... | 1 | .... | .... | 1 | 2 | .... | 84 | 80 | ...... | ...... | 2 | 2 | ...... | ...... | 84 |
| Fracture | 14 | 6 | .... | 4 | .... | .... | 1 | .... | .... | .... | .... | .... | 25 | 5 | 4 | 11 | 2 | 1 | 1 | 1 | 25 |
| **Face:** | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 17 | 6 | .... | 19 | .... | .... | 1 | .... | .... | .... | 1 | .... | 44 | 37 | 1 | ...... | 5 | 1 | ...... | ...... | 44 |
| Fracture | 13 | 6 | .... | 5 | .... | .... | .... | .... | .... | .... | .... | .... | 24 | 5 | 7 | 2 | 5 | 4 | 1 | ...... | 24 |
| **Neck** | 29 | 11 | .... | 11 | .... | .... | .... | .... | .... | .... | .... | .... | 51 | 36 | 8 | 9 | 2 | 1 | ...... | ...... | 51 |
| **Spine, fracture** | 3 | 3 | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 8 | ........ | 2 | 5 | ...... | 1 | ...... | ...... | 8 |
| **Thorax:** | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 20 | 21 | .... | 19 | .... | .... | .... | .... | .... | .... | 1 | .... | 61 | 52 | 1 | 1 | 3 | 3 | ...... | 1 | 61 |
| Penetrating | 48 | 32 | .... | 15 | .... | .... | .... | .... | .... | .... | .... | .... | 95 | 41 | 12 | 28 | 11 | 2 | ...... | 1 | 95 |
| **Abdomen:** | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 14 | 5 | .... | 14 | .... | .... | .... | .... | .... | .... | .... | .... | 33 | 32 | 1 | ...... | ...... | ...... | ...... | ...... | 33 |
| Penetrating | 31 | 8 | .... | 10 | .... | .... | .... | .... | .... | .... | .... | .... | 49 | 10 | 8 | 31 | 1 | 3 | ...... | 1 | 49 |
| **Pelvis, fracture** | 1 | ...... | .... | 8 | .... | .... | .... | .... | .... | .... | .... | .... | 4 | 2 | ...... | 2 | ...... | ...... | ...... | ...... | 4 |
| **Back and hip, flesh** | 33 | 24 | 1 | 13 | .... | .... | 3 | .... | .... | .... | .... | .... | 74 | 60 | 5 | ...... | 7 | 1 | 1 | ...... | 74 |
| **Perineum, genital and urinary organs** | 3 | 4 | .... | 5 | .... | .... | .... | .... | .... | .... | .... | .... | 12 | 8 | ...... | 3 | ...... | 1 | ...... | ...... | 12 |
| **Shoulder:** | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 40 | 26 | .... | 28 | .... | .... | 1 | .... | 1 | .... | 1 | .... | 97 | 78 | 4 | 1 | 9 | 4 | 1 | ...... | 97 |
| Fracture clavicle and scapula | ...... | 1 | .... | 2 | .... | .... | .... | .... | .... | .... | .... | .... | 3 | 2 | ...... | ...... | 1 | ...... | ...... | ...... | |
| Joint | 3 | 4 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 8 | 3 | 3 | 1 | ...... | 1 | ...... | ...... | 8 |
| **Arm:** | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 61 | 23 | 1 | 35 | .... | .... | .... | .... | .... | 1 | .... | .... | 121 | 103 | 4 | 1 | 9 | 4 | ...... | ...... | 121 |
| Fracture | 16 | 10 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 27 | 12 | 6 | 8 | 4 | 2 | ...... | ...... | 27 |
| **Elbow joint** | 4 | 4 | .... | ...... | .... | .... | .... | .... | .... | .... | .... | .... | 8 | 8 | 4 | ...... | 1 | ...... | ...... | ...... | 8 |
| **Forearm:** | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 57 | 25 | .... | 31 | .... | .... | 1 | .... | .... | .... | 1 | .... | 115 | 108 | 8 | ...... | 2 | ...... | ...... | ...... | 115 |
| Fracture | 7 | 15 | .... | 6 | .... | .... | .... | .... | 1 | .... | .... | .... | 29 | 17 | 6 | ...... | 4 | 2 | ...... | ...... | 29 |
| **Hand, flesh** | 41 | 16 | 2 | 32 | .... | 1 | .... | .... | .... | .... | 2 | 1 | 95 | 89 | 1 | ...... | 4 | 3 | ...... | ...... | 95 |
| **Carpus and metacarpus, fracture** | 2 | 3 | .... | 3 | .... | .... | .... | .... | .... | .... | .... | .... | 8 | 6 | 2 | ...... | ...... | ...... | ...... | ...... | 8 |
| **Fingers, fracture** | 4 | 5 | .... | 6 | .... | .... | .... | .... | .... | .... | .... | .... | 15 | 14 | 1 | ...... | ...... | ...... | ...... | ...... | 15 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hip joint | | 1 | | | | | | | | | | | 1 | | 1 | | | | | | 1 |
| Thigh: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 151 | 101 | 2 | 64 | | | 3 | | | | | | 321 | 260 | 19 | 6 | 20 | 13 | | 3 | 321 |
| Fracture upper third | 9 | 6 | | | | | | | | | | | 15 | 5 | | 3 | 5 | 2 | | | 15 |
| Fracture middle third | 12 | 2 | | 1 | | | | 1 | | | | | 16 | 4 | 5 | 2 | 3 | 1 | | 1 | 16 |
| Fracture lower third | 5 | 4 | | | | | | | | | | | 9 | 2 | 5 | | 1 | | | 1 | 9 |
| Kneejoint | 10 | 7 | | 5 | | | | | | | | | 22 | 6 | 8 | 1 | 4 | 3 | | | 22 |
| Leg: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 77 | 29 | 1 | 38 | | | | | | | | | 145 | 128 | 6 | 1 | 5 | 5 | | | 145 |
| Fracture | 20 | 19 | | 3 | | | 2 | | | | | | 44 | 18 | 11 | 5 | 5 | 5 | | | 44 |
| Ankle joint | 1 | 2 | | 2 | | | | | | | | | 5 | 3 | 2 | | | | | | 5 |
| Foot, flesh | 32 | 11 | 1 | 21 | | | | | | | | | 65 | 56 | 3 | | 3 | 2 | | 1 | 65 |
| Tarsus and metatarsus, fracture | 7 | 4 | | 4 | | | | | | | | | 15 | 12 | 3 | | | | | | 15 |
| Toes, fracture | 6 | | | 1 | | | | | | | | | 7 | 6 | | | 1 | | | | 7 |
| Unknown | 2 | | | 2 | | | | | | | | | 4 | 4 | | | | | | | 4 |
| Total | 826 | 455 | 9 | 440 | 1 | 1 | 18 | 1 | 2 | 2 | 8 | 1 | 1,759 | 1,307 | 136 | 116 | 119 | 67 | 4 | [1]10 | 1,759 |

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[1] On December 31, 1899, there remained on sick report 106 cases, but since that date 87 cases have been returned to duty, 44 discharged for disability, 2 discharged by expiration of term of service, and 3 died. The deaths include 1 of the 11 cases of cranial fracture, 1 of the 2 fatal cases of fractured femur in its middle third, and 1 of kneejoint injury.

## I.—REGULAR AND VOLUNTEER ARMIES, 1899.

### (c) *Gunshot wounds other than battle wounds.*

| Character and location of wound. | How received. | | | | | Nature of missile. | | | | | | | | | | | Disposition. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In line of duty. | Not in line of duty. | Suicidal. | Homicidal. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. | Small shot. | Shell. | Shrapnel. | Explosion of cartridge. | Explosion of gun. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Expiration of service and muster out. | Remaining last report. | Total. |
| Head: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 3 | 1 | | | 4 | | | | 3 | 1 | | | | | | 4 | 4 | | | | | | 4 |
| Fracture | 2 | | 1 | 1 | 4 | | | | 3 | 1 | | | | | | 4 | | | 4 | | | | 4 |
| Face: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 7 | 2 | | | 9 | 1 | 2 | | 1 | 2 | | 1 | | 2 | | 9 | 8 | 1 | | | | | 9 |
| Fracture | 1 | 2 | | | 3 | | | | 2 | 1 | | | | | | 3 | 2 | 1 | | | | | 3 |
| Neck | 6 | 3 | | | 9 | | | 2 | 6 | 1 | | | | | | 9 | 5 | | 3 | | 1 | | 9 |
| Spine, fracture | 1 | 2 | | | 3 | | | | 3 | | | | | | | 3 | | | 3 | | | | 3 |
| Thorax: | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 19 | 4 | | | 23 | 4 | 1 | 2 | 10 | 5 | | | | 1 | | 23 | 22 | | | | | 1 | 23 |
| Penetrating | 10 | 4 | 3 | 1 | 18 | | | 4 | 12 | 2 | | | | | | 18 | 8 | 1 | 8 | | 1 | | 18 |
| Abdomen: | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 3 | 2 | | | 5 | 1 | | | 2 | 2 | | | | | | 5 | 5 | | | | | | 5 |
| Penetrating | 8 | 2 | | 1 | 11 | | 1 | 2 | 4 | 4 | | | | | | 11 | | 1 | 10 | | | | 11 |
| Back and hip, flesh | 4 | | | | 4 | 1 | 1 | | | 2 | | | | | | 4 | 3 | | | 1 | | | 5 |
| Perineum, genital and urinary organs | 1 | 1 | | | 2 | | | | | 2 | | | | | | 2 | 2 | | | | | | 2 |
| Shoulder: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 10 | 4 | | | 14 | 4 | 2 | 1 | 6 | 1 | | | | | | 14 | 13 | | | | 1 | | 14 |
| Joint | 1 | | | | 1 | | | 1 | | | | | | | | 1 | 1 | | | | | | 1 |
| Arm: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 9 | 4 | | | 13 | 4 | 1 | | 5 | 8 | | | | | | 13 | 12 | 1 | | | | | 13 |
| Fracture | 4 | | 1 | | 5 | | | 3 | | 2 | | | | | | 5 | 1 | 4 | | | | | 5 |
| Elbow joint | 2 | | | | 2 | | | | 2 | | | | | | | 2 | | 1 | | | 1 | | 2 |
| Forearm: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 15 | 2 | | | 17 | 2 | 2 | 3 | 7 | 3 | | | | | | 17 | 15 | 1 | 1 | | | | 17 |
| Fracture | 5 | 3 | | | 8 | | | 1 | 5 | 1 | | | | 1 | | 8 | 6 | 2 | | | | | 8 |
| Wrist joint | 2 | | | | 2 | | | 1 | 1 | | | | | | | 2 | 1 | 1 | | | | | 2 |
| Hand, flesh | 55 | 17 | | | 72 | 1 | 2 | 11 | 87 | 17 | | | | 2 | 2 | 72 | 70 | 1 | | 1 | | | 72 |
| Carpus and metacarpus, fracture | 10 | 3 | | | 13 | | | 6 | 4 | 2 | 1 | | | | | 13 | 10 | 2 | 1 | | | | 13 |

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fingers, fracture | 76 | 14 | | | 90 | 1 | | 31 | 46 | 11 | 1 | | | | | 90 | 68 | 18 | | 4 | | | 90 |
| Thigh: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 31 | 10 | | | 41 | | 3 | 4 | 22 | 10 | | 1 | 1 | | | 41 | 34 | 1 | 1 | 2 | 2 | 1 | 41 |
| Fracture upper third | 2 | | | | 2 | | | 1 | | 1 | | | | | | 2 | | 2 | | | | | 2 |
| Fracture middle third | | 1 | | | 1 | | | | 1 | | | | | | | 1 | | | | | 1 | | 1 |
| Kneejoint | 2 | | | | 2 | | | 1 | 1 | | | | | | | 2 | 2 | | | | | | 2 |
| Leg: | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 35 | 6 | | | 41 | 5 | | 6 | 19 | 10 | | 1 | | | | 41 | 35 | 2 | | 1 | 3 | | 41 |
| Fracture | 7 | 3 | | | 10 | | | 3 | 5 | 2 | | | | | | 10 | 8 | 1 | | 1 | | | 10 |
| Ankle joint | 1 | | | | 1 | | | 1 | | | | | | | | 1 | 1 | | | | | | 1 |
| Foot, flesh | 49 | 6 | | | 55 | 1 | | 26 | 19 | 9 | | | | | | 55 | 44 | 2 | 1 | 5 | 1 | 2 | 55 |
| Tarsus and metatarsus, fracture | 14 | 1 | | | 15 | | 1 | 7 | 6 | 1 | | | | | | 15 | 12 | 1 | | | 1 | 1 | 15 |
| Toes, fracture | 18 | | | | 13 | | | 5 | 7 | 1 | | | | | | 18 | 12 | | | | 1 | | 13 |
| Unknown | 3 | 1 | | | 4 | | | | 3 | 1 | | | | | | 4 | 8 | | 1 | | | | 4 |
| Total | 411 | 98 | 5 | 3 | 517 | 25 | 16 | 122 | 242 | 98 | 2 | 3 | 1 | 6 | 2 | 517 | 407 | 44 | 33 | 15 | 18 | [1]5 | 517 |

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[1] On December 31, 1899, there remained on sick report 70 cases, but since that date 47 cases have been returned to duty, 17 discharged for disability, and 1 discharged by order.

## II.—REGULAR ARMY, 1899.

### (*a*) *All gunshot wounds.*

| Character and location of wound. | How received. | | | | | | Nature of missile. | | | | | | | | | | | | | | | Disposition. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In action. | Not in action. | | | | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Jacket of bullet. | Cartridge shell. | Revolver. | Small shot. | Shell. | Canister. | Shrapnel. | Splinter. | Explosion of cartridge. | Explosion of primer. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Expiration of service. | Death, other causes. | Remaining last report. | Total. |
| | | In line of duty. | Not in line of duty. | Suicidal. | Homicidal. | | | | | | | | | | | | | | | | | | | | | | | | |
| Head: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 37 | 1 | | | | 38 | 17 | 8 | | 11 | 1 | | | | 1 | | | | | | 38 | 38 | | | | | | | 38 |
| Fracture | 10 | | | | 1 | 11 | 6 | 3 | | | | | 1 | | 1 | | | | | | 11 | 3 | 3 | 4 | | | 1 | | 11 |
| Face: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 15 | 5 | 2 | | | 22 | 7 | 4 | | 7 | | | 2 | | 1 | | | | 1 | | 22 | 21 | | | 1 | | | | 22 |
| Fracture | 8 | 1 | 2 | | | 11 | 4 | 3 | | 3 | | | 1 | | | | | | | | 11 | 3 | 5 | 2 | | | 1 | | 11 |
| Neck | 16 | 1 | 3 | | | 20 | 11 | 3 | 1 | 5 | | | | | | | | | | | 20 | 14 | 3 | 3 | | | | | 20 |
| Spine, fracture | 5 | 1 | 2 | | | 8 | 2 | 2 | 1 | 3 | | | | | | | | | | | 8 | | 1 | 7 | | | | | 8 |
| Thorax: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 23 | 8 | 3 | | | 34 | 13 | 10 | 1 | 6 | | | 4 | | | | | | | | 34 | 32 | 1 | | | | | 1 | 34 |
| Penetrating | 34 | 5 | 3 | 3 | 1 | 46 | 15 | 15 | 4 | 10 | | | 2 | | | | | | | | 46 | 23 | 8 | 13 | 1 | | | 1 | 46 |
| Abdomen: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 9 | | | | | 9 | 6 | 1 | | 2 | | | | | | | | | | | 9 | 8 | 1 | | | | | | 9 |
| Penetrating | 18 | 3 | 1 | | 1 | 23 | 13 | 4 | 2 | 3 | | | 1 | | | | | | | | 23 | 4 | 4 | 14 | 1 | | | | 23 |
| Pelvis, fracture | 3 | | | | | 3 | 1 | | | 2 | | | | | | | | | | | 3 | 2 | | 1 | | | | | 3 |
| Back and hip, flesh | 25 | 2 | | | | 27 | 10 | 11 | 1 | 1 | | | 1 | | 8 | | | | | | 27 | 24 | 3 | | | | | | 27 |
| Perineum, genital and urinary organs | 5 | 1 | 1 | | | 7 | 3 | 1 | | 1 | | | 2 | | | | | | | | 7 | 7 | | | | | | | 7 |
| Shoulder: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 29 | 4 | 4 | | | 37 | 13 | 11 | | 11 | | | 1 | | 1 | | | | | | 37 | 33 | 2 | | 1 | | 1 | | 37 |
| Joint | 5 | 1 | | | | 6 | 3 | 2 | 1 | | | | | | | | | | | | 6 | 4 | 2 | | | | | | 6 |
| Arm: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 45 | 3 | 3 | | | 51 | 23 | 12 | 1 | 12 | | | 2 | | | | | 1 | | | 51 | 44 | 5 | 1 | | 1 | | | 51 |
| Fracture | 13 | 3 | | 1 | | 17 | 11 | 2 | 3 | | | | 1 | | | | | | | | 17 | 9 | 8 | | | | | | 17 |
| Elbow joint | 6 | 1 | | | | 7 | 3 | 3 | | 1 | | | | | | | | | | | 7 | 3 | 4 | | | | | | 7 |
| Forearm: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 53 | 10 | 2 | | | 65 | 31 | 14 | 3 | 14 | | | 2 | | 1 | | | | | | 65 | 62 | 2 | 1 | | | | | 65 |
| Fracture | 11 | 2 | 3 | | | 16 | 8 | 6 | 1 | 4 | | | 1 | | | | | | 1 | | 16 | 10 | 5 | | 1 | | | | 16 |
| Wrist joint | | 1 | | | | 1 | | | 1 | | | | | | | | | | | | 1 | | 1 | | | | | | 1 |
| Hand, flesh | 35 | 29 | 12 | | | 76 | 21 | 9 | 10 | 21 | | 1 | 18 | | | | | | | 1 | 76 | 73 | 1 | | 1 | 1 | | | 76 |
| Carpus and metacarpus, fracture | 5 | 7 | 3 | | | 15 | 1 | 3 | 5 | 4 | | | 1 | 1 | | | | | | | 15 | 11 | 8 | 1 | | | | | 15 |
| Fingers, fracture | 12 | 50 | 11 | | | 73 | 4 | 8 | 25 | 33 | | | 7 | 1 | | | | | | | 73 | 60 | 13 | | | | | | 73 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hip joint | 1 | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1 | ... | 1 | ... | ... | ... | ... | ... | 1 |
| Thigh: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 132 | 15 | 4 | ... | ... | 151 | 72 | 40 | 4 | 27 | ... | ... | 5 | ... | 2 | ... | 1 | ... | ... | ... | 151 | 128 | 13 | 4 | 3 | ... | ... | 3 | 151 |
| Fracture upper third | 3 | 2 | ... | ... | ... | 5 | 1 | 2 | 1 | ... | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 5 | 2 | 2 | 1 | ... | ... | ... | ... | 5 |
| Fracture middle third | 9 | ... | ... | ... | ... | 9 | 6 | 2 | ... | ... | ... | ... | ... | ... | ... | 1 | ... | ... | ... | ... | 9 | 2 | 5 | 1 | 1 | ... | ... | ... | 9 |
| Fracture lower third | 7 | ... | ... | ... | ... | 7 | 3 | 4 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 7 | 2 | 4 | ... | ... | ... | ... | 1 | 7 |
| Kneejoint | 7 | 1 | ... | ... | ... | 8 | 3 | 3 | 1 | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 8 | 2 | 5 | 1 | ... | ... | ... | ... | 8 |
| Leg: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 64 | 17 | 2 | ... | ... | 83 | 37 | 15 | 6 | 17 | ... | ... | 8 | ... | ... | ... | ... | ... | ... | ... | 83 | 75 | 6 | ... | 1 | 1 | ... | ... | 83 |
| Fracture | 24 | 6 | 2 | ... | ... | 32 | 13 | 8 | 2 | 6 | ... | ... | 2 | ... | 1 | ... | ... | ... | ... | ... | 32 | 18 | 8 | 4 | 2 | ... | ... | ... | 32 |
| Ankle joint | 4 | ... | ... | ... | ... | 4 | 1 | 2 | ... | 1 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 2 | 2 | ... | ... | ... | ... | ... | 4 |
| Foot, flesh | 25 | 33 | 1 | ... | ... | 59 | 11 | 7 | 21 | 17 | ... | ... | 3 | ... | ... | ... | ... | ... | ... | ... | 59 | 47 | 5 | 1 | 4 | ... | ... | 2 | 59 |
| Tarsus and metatarsus, fracture | 7 | 10 | ... | ... | ... | 17 | 4 | 2 | 6 | 4 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 17 | 13 | 3 | ... | ... | ... | ... | 1 | 17 |
| Toes, fracture | 6 | 8 | ... | ... | ... | 14 | 6 | ... | 5 | 2 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 14 | 13 | ... | ... | 1 | ... | ... | ... | 14 |
| Unknown | 1 | 1 | 1 | ... | ... | 3 | 1 | ... | ... | 1 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 3 | 3 | ... | ... | ... | ... | ... | ... | 3 |
| Total | 712 | 232 | 65 | 4 | 3 | 1,016 | 379 | 216 | 106 | 230 | 1 | 1 | 64 | 2 | 11 | 1 | 1 | 1 | 2 | 1 | 1,016 | 795 | 129 | 59 | 18 | 3 | 3 | [1]9 | 1,016 |

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[1] On December 31, 1899, there remained on sick report 150 cases, but since that date 85 cases have been returned to duty, 52 discharged for disability, 1 discharged by order and 2 by expiration of term of service, and 1 died. The fatal case was one of injury to the kneejoint.

## II.—REGULAR ARMY, 1899.

### (b) *Gunshot wounds received in action.*

| Character and location of wound. | Nature of missile. | | | | | | | | | | | Disposition. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Jacket of bullet. | Cartridge shell. | Shell. | Canister. | Splinters. | Explosion of primer. | Total. | Duty. | Certificate of disability. | Died. | Discharged by order. | Expiration of service. | Death, other causes. | Remaining last report. | Total. |
| Head: | | | | | | | | | | | | | | | | | | | |
| Flesh | 17 | 8 | | 10 | 1 | | 1 | | | | 37 | 37 | | | | | | | 37 |
| Fracture | 6 | 3 | | | | | 1 | | | | 10 | 3 | 3 | 3 | | | 1 | | 10 |
| Face: | | | | | | | | | | | | | | | | | | | |
| Flesh | 6 | 3 | | 6 | | | | | | | 15 | 14 | | | 1 | | | | 15 |
| Fracture | 4 | 3 | | 1 | | | | | | | 8 | 1 | 4 | 2 | | | 1 | | 8 |
| Neck | 11 | 3 | | 2 | | | | | | | 16 | 12 | 3 | 1 | | | | | 16 |
| Spine, fracture | 2 | 2 | 1 | | | | | | | | 5 | | 1 | 4 | | | | | 5 |
| Thorax: | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 10 | 9 | | 4 | | | | | | | 23 | 21 | 1 | | | | | 1 | 23 |
| Penetrating | 15 | 15 | | 4 | | | | | | | 34 | 17 | 7 | 8 | 1 | | | 1 | 34 |
| Abdomen: | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 6 | 1 | | 2 | | | | | | | 9 | 8 | 1 | | | | | | 9 |
| Penetrating | 13 | 3 | | 2 | | | | | | | 18 | 4 | 3 | 10 | 1 | | | | 18 |
| Pelvis, fracture | 1 | | | 2 | | | | | | | 3 | 2 | | 1 | | | | | 3 |
| Back and hip, flesh | 10 | 10 | 1 | 1 | | | 3 | | | | 25 | 22 | 3 | | | | | | 25 |
| Perineum, genital and urinary organs | 3 | 1 | | 1 | | | | | | | 5 | 5 | | | | | | | 5 |
| Shoulder: | | | | | | | | | | | | | | | | | | | |
| Flesh | 11 | 10 | | 7 | | | 1 | | | | 29 | 25 | 2 | | 1 | | 1 | | 29 |
| Joint | 3 | 2 | | | | | | | | | 5 | 3 | 2 | | | | | | 5 |
| Arm: | | | | | | | | | | | | | | | | | | | |
| Flesh | 23 | 11 | 1 | 9 | | | | | 1 | | 45 | 39 | 4 | 1 | | 1 | | | 45 |
| Fracture | 11 | 2 | | | | | | | | | 13 | 8 | 5 | | | | | | 13 |
| Elbow joint | 3 | 3 | | | | | | | | | 6 | 3 | 3 | | | | | | 6 |
| Forearm: | | | | | | | | | | | | | | | | | | | |
| Flesh | 30 | 13 | | 9 | | | 1 | | | | 53 | 52 | 1 | | | | | | 53 |
| Fracture | 3 | 6 | | 2 | | | | | | | 11 | 6 | 4 | | 1 | | | | 11 |
| Wrist joint | | | | | | | | | | | | | | | | | | | |
| Hand, flesh | 20 | 7 | 1 | 5 | | 1 | | | | 1 | 35 | 34 | | | | 1 | | | 35 |
| Carpus and metacarpus, fracture | 1 | 3 | | 1 | | | | | | | 5 | 3 | 2 | | | | | | 5 |
| Fingers, fracture | 4 | 3 | | 5 | | | | | | | 12 | 12 | | | | | | | 12 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hip joint | | 1 | | | | | | | | | 1 | | 1 | | | | | | 1 |
| Thigh: | | | | | | | | | | | | | | | | | | | |
| Flesh | 72 | 40 | 1 | 17 | | | 2 | | | | 132 | 110 | 13 | 4 | 3 | | | 2 | 132 |
| Fracture upper third | 1 | 2 | | | | | | | | | 3 | 2 | | 1 | | | | | 3 |
| Fracture middle third | 6 | 2 | | | | | | 1 | | | 9 | 2 | 5 | 1 | 1 | | | | 9 |
| Fracture lower third | 3 | 4 | | | | | | | | | 7 | 2 | 4 | | | | | 1 | 7 |
| Kneejoint | 3 | 3 | | 1 | | | | | | | 7 | 1 | 5 | 1 | | | | | 7 |
| Leg: | | | | | | | | | | | | | | | | | | | |
| Flesh | 37 | 15 | 1 | 11 | | | | | | | 64 | 58 | 4 | | 1 | 1 | | | 64 |
| Fracture | 13 | 8 | | 2 | | | 1 | | | | 24 | 12 | 7 | 4 | 1 | | | | 24 |
| Ankle joint | 1 | 2 | | 1 | | | | | | | 4 | 2 | 2 | | | | | | 4 |
| Foot, flesh | 11 | 7 | 1 | 6 | | | | | | | 25 | 20 | 3 | | 1 | | | 1 | 25 |
| Tarsus and metatarsus, fracture | 4 | 1 | | 2 | | | | | | | 7 | 5 | 2 | | | | | | 7 |
| Toes, fracture | 6 | | | | | | | | | | 6 | 5 | | | 1 | | | | 6 |
| Unknown | 1 | | | | | | | | | | 1 | 1 | | | | | | | 1 |
| Total | 371 | 206 | 7 | 118 | 1 | 1 | 10 | 1 | 1 | 1 | 712 | 551 | 95 | 41 | 13 | 3 | 3 | [1]6 | 712 |

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[1] On December 31, 1899, there remained on sick report 100 cases, but since that date 52 cases were returned to duty, 39 discharged for disability, 2 discharged on account of expiration of term of service, and 1 died—the last a case of kneejoint injury.

## II.—REGULAR ARMY, 1899.

### (c) *Gunshot wounds other than battle wounds.*

| Character and location of wound. | How received. | | | | | Nature of missile. | | | | | | | | | | Disposition. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In line of duty. | Not in line of duty. | Suicidal. | Homicidal. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. | Small shot. | Shell. | Shrapnel. | Explosion of cartridge. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Remaining last report. | Total. |
| Head: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 1 | | | | 1 | | | | 1 | | | | | | 1 | 1 | | | | | 1 |
| Fracture | | | | 1 | 1 | | | | | 1 | | | | | 1 | | | 1 | | | 1 |
| Face: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 5 | 2 | | | 7 | 1 | 1 | | 1 | 2 | | 1 | | 1 | 7 | 7 | | | | | 7 |
| Fracture | 1 | 2 | | | 3 | | | | 2 | 1 | | | | | 3 | 2 | 1 | | | | 3 |
| Neck | 1 | 3 | | | 4 | | | 1 | 3 | | | | | | 4 | 2 | | 2 | | | 4 |
| Spine, fracture | 1 | 2 | | | 3 | | | | 3 | | | | | | 3 | | | 3 | | | 3 |
| Thorax: | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 8 | 3 | | | 11 | 3 | 1 | 1 | 2 | 4 | | | | | 11 | 11 | | | | | 11 |
| Penetrating | 5 | 3 | 3 | 1 | 12 | | | 4 | 6 | 2 | | | | | 12 | 6 | 1 | 5 | | | 12 |
| Abdomen: | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | | | | | | | | | | | | | | | | | | | | | |
| Penetrating | 3 | 1 | | 1 | 5 | | 1 | 2 | 1 | 1 | | | | | 5 | | 1 | 4 | | | 5 |
| Pelvis, fracture | | | | | | | | | | | | | | | | | | | | | |
| Back and hip, flesh | 2 | | | | 2 | | 1 | | | 1 | | | | | 2 | 2 | | | | | 2 |
| Perineum, genital and urinary organs | 1 | 1 | | | 2 | | | | | 2 | | | | | 2 | 2 | | | | | 2 |
| Shoulder: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 4 | 4 | | | 8 | 2 | 1 | | 4 | 1 | | | | | 8 | 8 | | | | | 8 |
| Fracture clavicle or scapula | | | | | | | | | | | | | | | | | | | | | |
| Joint | 1 | | | | 1 | | | 1 | | | | | | | 1 | 1 | | | | | 1 |
| Arm: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 3 | 3 | | | 6 | | 1 | | 3 | 2 | | | | | 6 | 5 | 1 | | | | 6 |
| Fracture | 3 | | 1 | | 4 | | | 3 | | 1 | | | | | 4 | 1 | 3 | | | | 4 |
| Elbow joint | 1 | | | | 1 | | | | 1 | | | | | | 1 | | 1 | | | | 1 |
| Forearm: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 10 | 2 | | | 12 | 1 | 1 | 3 | 5 | 2 | | | | | 12 | 10 | 1 | 1 | | | 12 |
| Fracture | 2 | 3 | | | 5 | | | 1 | 2 | 1 | | | | 1 | 5 | 4 | 1 | | | | 5 |
| Wrist joint | 1 | | | | 1 | | | 1 | | | | | | | 1 | | 1 | | | | 1 |
| Hand, flesh | 29 | 12 | | | 41 | 1 | 2 | 9 | 16 | 13 | | | | | 41 | 39 | 1 | | 1 | | 41 |
| Carpus and metacarpus, fracture | 7 | 3 | | | 10 | | | 5 | 3 | 1 | 1 | | | | 10 | 8 | 1 | 1 | | | 10 |

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fingers, fracture | 50 | 11 | .... | .... | 61 | ...... | ...... | 25 | 28 | 7 | 1 | .... | .... | .... | 61 | 48 | 13 | ...... | ...... | ...... | 61 |
| Thigh: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 15 | 4 | .... | .... | 19 | ...... | ...... | 3 | 10 | 5 | .... | .... | 1 | .... | 19 | 18 | ...... | ...... | ...... | 1 | 19 |
| Fracture upper third | 2 | ...... | .... | .... | 2 | ...... | ...... | 1 | ...... | 1 | .... | .... | .... | .... | 2 | ...... | 2 | ...... | ...... | ...... | 2 |
| Kneejoint | 1 | ...... | .... | .... | 1 | ...... | ...... | 1 | ...... | ...... | .... | .... | .... | .... | 1 | 1 | ...... | ...... | ...... | ...... | 1 |
| Leg: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 17 | 2 | .... | .... | 19 | ...... | ...... | 5 | 6 | 8 | .... | .... | .... | .... | 19 | 17 | 2 | ...... | ...... | ...... | 19 |
| Fracture | 6 | 2 | .... | .... | 8 | ...... | ...... | 2 | 4 | 2 | .... | .... | .... | .... | 8 | 6 | 1 | ...... | 1 | ...... | 8 |
| Foot, flesh | 33 | 1 | .... | .... | 34 | ...... | ...... | 20 | 11 | 3 | .... | .... | .... | .... | 34 | 27 | 2 | 1 | 3 | 1 | 34 |
| Tarsus and metatarsus, fracture | 10 | ...... | .... | .... | 10 | ...... | 1 | 6 | 2 | 1 | .... | .... | .... | .... | 10 | 8 | 1 | ...... | ...... | 1 | 10 |
| Toes, fracture | 8 | ...... | .... | .... | 8 | ...... | ...... | 5 | 2 | 1 | .... | .... | .... | .... | 8 | 8 | ...... | ...... | ...... | ...... | 8 |
| Unknown | 1 | 1 | .... | .... | 2 | ...... | ...... | ...... | 1 | 1 | .... | .... | .... | .... | 2 | 2 | ...... | ...... | ...... | ...... | 2 |
| Total | 232 | 65 | 4 | 3 | 304 | 8 | 10 | 99 | 117 | 64 | 2 | 1 | 1 | 2 | 304 | 244 | 34 | 18 | 5 | [1]3 | 304 |

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[1] On December 31, 1899, there remained on sick report 50 cases, but since that date 33 cases have been returned to duty, 13 discharged for disability, and 1 by order.

## III.—VOLUNTEER ARMY, 1899

### (a) *All gunshot wounds.*

| Character and location of wound. | How received. | | | | | Nature of missile. | | | | | | | | | | | Disposition. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In action. | Not in action. | | | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. | Shell. | Shrapnel. | Splinter. | Explosion of gun. | Explosion of cartridge. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Mustered out. | Death, other causes. | Remaining last report. | Total. |
| | | In line of duty. | Not in line of duty. | Suicidal. | | | | | | | | | | | | | | | | | | | | |
| **Head:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 47 | 2 | 1 | .... | 50 | 16 | 3 | .... | 27 | 1 | .... | .... | 1 | 2 | .... | 50 | 46 | .... | .... | 2 | 2 | .... | .... | 50 |
| Fracture | 15 | 2 | .... | 1 | 18 | 8 | 3 | .... | 7 | .... | .... | .... | .... | .... | .... | 18 | 2 | 1 | 11 | 2 | 1 | .... | 1 | 18 |
| **Face:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 29 | 2 | .... | .... | 31 | 11 | 4 | .... | 13 | .... | 1 | .... | .... | 1 | 1 | 31 | 24 | 2 | .... | 4 | 1 | .... | .... | 31 |
| Fracture | 16 | .... | .... | .... | 16 | 9 | 3 | .... | 4 | .... | .... | .... | .... | .... | .... | 16 | 4 | 3 | .... | 5 | 4 | .... | .... | 16 |
| **Neck** | 35 | 5 | .... | .... | 40 | 18 | 8 | 1 | 12 | 1 | .... | .... | .... | .... | .... | 40 | 27 | .... | 9 | 2 | 2 | .... | .... | 40 |
| **Spine, fracture** | 3 | .... | .... | .... | 3 | 1 | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | 3 | .... | 1 | 1 | .... | 1 | .... | .... | 3 |
| **Thorax:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 38 | 11 | 1 | .... | 50 | 11 | 12 | 1 | 23 | 1 | .... | .... | .... | 1 | 1 | 50 | 42 | .... | 1 | 3 | 3 | .... | 1 | 50 |
| Penetrating | 61 | 5 | 1 | .... | 67 | 33 | 17 | .... | 17 | .... | .... | .... | .... | .... | .... | 67 | 26 | 5 | 23 | 10 | 3 | .... | .... | 67 |
| **Abdomen:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 24 | 3 | 2 | .... | 29 | 9 | 4 | .... | 14 | 2 | .... | .... | .... | .... | .... | 29 | 29 | .... | .... | .... | .... | .... | .... | 29 |
| Penetrating | 31 | 5 | 1 | .... | 37 | 18 | 5 | .... | 11 | 3 | .... | .... | .... | .... | .... | 37 | 6 | .... | 27 | .... | 3 | .... | 1 | 37 |
| **Pelvis, fracture** | 1 | .... | .... | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 1 | .... | .... | .... | .... | 1 |
| **Back and hip, flesh** | 49 | 2 | .... | .... | 51 | 24 | 14 | .... | 12 | 1 | .... | .... | .... | .... | .... | 51 | 39 | 2 | .... | 8 | 1 | 1 | .... | 51 |
| **Perineum, genital and urinary organs** | 7 | .... | .... | .... | 7 | .... | 3 | .... | 4 | .... | .... | .... | .... | .... | .... | 7 | 3 | .... | 3 | .... | 1 | .... | .... | 7 |
| **Shoulder:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 68 | 6 | .... | .... | 74 | 31 | 17 | 1 | 23 | .... | .... | 1 | .... | 1 | .... | 74 | 58 | 2 | 1 | 8 | 5 | .... | .... | 74 |
| Fracture clavicle or scapula | 3 | .... | .... | .... | 3 | .... | 1 | .... | 2 | .... | .... | .... | .... | .... | .... | 3 | 2 | .... | .... | 1 | .... | .... | .... | 3 |
| Joint | 3 | .... | .... | .... | 3 | .... | 2 | .... | 1 | .... | .... | .... | .... | .... | .... | 3 | .... | 1 | 1 | .... | 1 | .... | .... | 3 |
| **Arm:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 76 | 6 | 1 | .... | 83 | 42 | 12 | .... | 28 | 1 | .... | .... | .... | .... | .... | 83 | 71 | .... | .... | 9 | 3 | .... | .... | 83 |
| Fracture | 14 | 1 | .... | .... | 15 | 5 | 8 | .... | 1 | 1 | .... | .... | .... | .... | .... | 15 | 4 | 2 | 3 | 4 | 2 | .... | .... | 15 |
| **Elbow joint** | 2 | 1 | .... | .... | 3 | 1 | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | 3 | .... | 1 | .... | 1 | 1 | .... | .... | 3 |
| **Forearm:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 62 | 5 | .... | .... | 67 | 28 | 13 | .... | 24 | 1 | .... | .... | .... | 1 | .... | 67 | 61 | 2 | .... | 4 | .... | .... | .... | 67 |
| Fracture | 18 | 3 | .... | .... | 21 | 4 | 9 | .... | 7 | .... | .... | 1 | .... | .... | .... | 21 | 18 | 3 | .... | 3 | 2 | .... | .... | 21 |
| **Wrist joint** | .... | 1 | .... | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | 1 |
| **Hand, flesh** | 60 | 26 | 5 | .... | 91 | 21 | 9 | 8 | 48 | 4 | .... | .... | .... | 4 | 2 | 91 | 86 | 1 | .... | 2 | 2 | .... | .... | 91 |
| **Carpus and metacarpus, fracture** | 3 | 3 | .... | .... | 6 | 1 | .... | 1 | 3 | 1 | .... | .... | .... | .... | .... | 6 | 5 | 1 | .... | .... | .... | .... | .... | 6 |

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fingers, fracture | 3 | 26 | 3 | .... | 32 | 1 | 2 | 6 | 19 | 4 | .... | .... | .... | .... | .... | 32 | 22 | 6 | .... | 4 | .... | .... | .... | 32 |
| Thigh: | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 189 | 16 | 6 | .... | 211 | 79 | 64 | 2 | 59 | 5 | 2 | .... | .... | .... | .... | 211 | 166 | 7 | 3 | 19 | 15 | .... | 1 | 211 |
| Fracture upper third | 12 | .... | .... | .... | 12 | 8 | 4 | .... | .... | .... | .... | .... | .... | .... | .... | 12 | 3 | .... | 2 | 5 | 2 | .... | .... | 12 |
| Fracture middle third | 7 | .... | 1 | .... | 8 | 6 | .... | .... | 2 | .... | .... | .... | .... | .... | .... | 8 | 2 | .... | 1 | 2 | 2 | .... | 1 | 8 |
| Fracture lower third | 2 | .... | .... | .... | 2 | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | .... | 1 | .... | 1 | .... | .... | .... | 2 |
| Kneejoint | 15 | 1 | .... | .... | 16 | 7 | 4 | .... | 5 | .... | .... | .... | .... | .... | .... | 16 | 6 | 3 | .... | 4 | 3 | .... | .... | 16 |
| Leg: | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 81 | 18 | 4 | .... | 103 | 45 | 14 | 1 | 40 | 2 | 1 | .... | .... | .... | .... | 103 | 88 | 2 | 1 | 5 | 7 | .... | .... | 103 |
| Fracture | 20 | 1 | 1 | .... | 22 | 7 | 11 | 1 | 2 | .... | 1 | .... | .... | .... | .... | 22 | 8 | 4 | 1 | 4 | 5 | .... | .... | 22 |
| Ankle joint | 1 | 1 | .... | .... | 2 | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | 2 | 2 | .... | .... | .... | .... | .... | .... | 2 |
| Foot, flesh | 40 | 16 | 5 | .... | 61 | 22 | 4 | 6 | 23 | 6 | .... | .... | .... | .... | .... | 61 | 53 | .... | .... | 4 | 3 | .... | 1 | 61 |
| Tarsus and metatarsus, fracture | 8 | 4 | 1 | .... | 13 | 3 | 8 | 1 | 6 | .... | .... | .... | .... | .... | .... | 13 | 11 | 1 | .... | .... | 1 | .... | .... | 13 |
| Toes, fracture | 1 | 5 | .... | .... | 6 | .... | .... | .... | 6 | .... | .... | .... | .... | .... | .... | 6 | 5 | .... | .... | .... | 1 | .... | .... | 6 |
| Unknown | 3 | 2 | .... | .... | 5 | 1 | .... | .... | 4 | .... | .... | .... | .... | .... | .... | 5 | 4 | .... | 1 | .... | .... | .... | .... | 5 |
| Total | 1,047 | 179 | 33 | 1 | 1,260 | 472 | 255 | 25 | 452 | 34 | 5 | 2 | 1 | 10 | 4 | 1,260 | 919 | 51 | 90 | 116 | 77 | 1 | [1]6 | 1,260 |

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[1] On December 31, 1899, there remained on sick report 66 cases, but since that date 49 cases have been returned to duty, 9 discharged on account of disability, and 2 have ended fatally. The deaths include 1 case of fracture of the middle third of the femur and 1 of the 11 fatal cases of fracture of the cranium.

### III.—VOLUNTEER ARMY, 1899.

### (*b*) *Gunshot wounds received in action.*

| Character and location of wound. | Nature of missile. | | | | | | | | | Disposition. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Shell. | Shrapnel. | Splinters. | Explosion of gun. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Mustered out. | Death, other causes. | Remaining last report. | Total. |
| Head: | | | | | | | | | | | | | | | | | |
| Flesh | 16 | 3 | | 25 | | | 1 | 2 | 47 | 43 | | | 2 | 2 | | | 47 |
| Fracture | 8 | 3 | | 4 | | | | | 15 | 2 | 1 | 8 | 2 | 1 | | 1 | 15 |
| Face: | | | | | | | | | | | | | | | | | |
| Flesh | 11 | 3 | | 13 | 1 | | | 1 | 29 | 23 | 1 | | 4 | 1 | | | 29 |
| Fracture | 9 | 3 | | 4 | | | | | 16 | 4 | 3 | | 5 | 4 | | | 16 |
| Neck | 18 | 8 | | 9 | | | | | 35 | 24 | | 8 | 2 | 1 | | | 35 |
| Spine, fracture | 1 | 1 | | 1 | | | | | 3 | | 1 | 1 | | 1 | | | 3 |
| Thorax: | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 10 | 12 | | 15 | | | | 1 | 38 | 31 | | 1 | 3 | 3 | | | 38 |
| Penetrating | 33 | 17 | | 11 | | | | | 61 | 24 | 5 | 20 | 10 | 2 | | | 61 |
| Abdomen: | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 8 | 4 | | 12 | | | | | 24 | 24 | | | | | | | 24 |
| Penetrating | 18 | 5 | | 8 | | | | | 31 | 6 | | 21 | | 3 | | 1 | 31 |
| Pelvis, fracture | | | | 1 | | | | | 1 | | | 1 | | | | | 1 |
| Back and hip, flesh | 23 | 14 | | 12 | | | | | 49 | 38 | 2 | | 7 | 1 | 1 | | 49 |
| Perineum, genital and urinary organs | | 3 | | 4 | | | | | 7 | 3 | | 3 | | 1 | | | 7 |
| Shoulder: | | | | | | | | | | | | | | | | | |
| Flesh | 29 | 16 | | 21 | | 1 | | 1 | 68 | 53 | 2 | 1 | 8 | 4 | | | 68 |
| Fracture, clavicle and scapula | | 1 | | 2 | | | | | 3 | 2 | | | 1 | | | | 3 |
| Joint | | 2 | | 1 | | | | | 3 | | 1 | 1 | | 1 | | | 3 |
| Arm: | | | | | | | | | | | | | | | | | |
| Flesh | 38 | 12 | | 26 | | | | | 76 | 64 | | | 9 | 3 | | | 76 |
| Fracture | 5 | 8 | | 1 | | | | | 14 | 4 | 1 | 3 | 4 | 2 | | | 14 |
| Elbow joint | 1 | 1 | | | | | | | 2 | | 1 | | 1 | | | | 2 |
| Forearm: | | | | | | | | | | | | | | | | | |
| Flesh | 27 | 12 | | 22 | | | | 1 | 62 | 56 | 2 | | 4 | | | | 62 |
| Fracture | 4 | 9 | | 4 | | 1 | | | 18 | 11 | 2 | | 3 | 2 | | | 18 |
| Hand, flesh | 21 | 9 | 1 | 27 | | | | 2 | 60 | 55 | 1 | | 2 | 2 | | | 60 |
| Carpus and metacarpus, fracture | 1 | | | 2 | | | | | 3 | 3 | | | | | | | 3 |
| Fingers, fracture | | 2 | | 1 | | | | | 3 | 2 | 1 | | | | | | 3 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thigh: | | | | | | | | | | | | | | | | | |
| Flesh | 79 | 61 | 1 | 47 | 1 | | | | 189 | 150 | 6 | 2 | 17 | 13 | | 1 | 189 |
| Fracture, upper third | 8 | 4 | | | | | | | 12 | 3 | | 2 | 5 | 2 | | | 12 |
| Fracture, middle third | 6 | | | 1 | | | | | 7 | 2 | | [1]1 | 2 | 1 | | 1 | 7 |
| Fracture, lower third | 2 | | | | | | | | 2 | | 1 | | 1 | | | | 2 |
| Kneejoint | 7 | 4 | | 4 | | | | | 15 | 5 | 3 | | 4 | 3 | | | 15 |
| Leg: | | | | | | | | | | | | | | | | | |
| Flesh | 40 | 14 | | 27 | | | | | 81 | 70 | 2 | 1 | 4 | 4 | | | 81 |
| Fracture | 7 | 11 | | 1 | 1 | | | | 20 | 6 | 4 | 1 | 4 | 5 | | | 20 |
| Ankle joint | | | | 1 | | | | | 1 | 1 | | | | | | | 1 |
| Foot, flesh | 21 | 4 | | 15 | | | | | 40 | 36 | | | 2 | 2 | | | 40 |
| Tarsus and metatarsus, fracture | 3 | 3 | | 2 | | | | | 8 | 7 | 1 | | | | | | 8 |
| Toes, fracture | | | | 1 | | | | | 1 | 1 | | | | | | | 1 |
| Unknown | 1 | | | 2 | | | | | 3 | 3 | | | | | | | 3 |
| Total | 455 | 249 | 2 | 327 | 3 | 2 | 1 | 8 | 1,047 | 756 | 41 | 75 | 106 | 64 | 1 | [1]4 | 1,047 |

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[1] On December 31, 1899, there remained on sick report 46 cases; but since that date 35 cases have been returned to duty, 5 discharged on account of disability, and 2 have died. The fatal cases comprise 1 case of fracture of the middle third of the femur and 1 of the 8 fatal fractures of the cranium.

## III.—VOLUNTEER ARMY, 1899.

### (c) *Gunshot wounds other than battle wounds.*

| Character and location of wound. | How received. | | | | Nature of missile. | | | | | | | | | Disposition. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In line of duty. | Not in line of duty. | Suicidal. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. | Shell. | Explosion of cartridge. | Explosion of gun. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Mustered out. | Remaining last report. | Total. |
| Head: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 2 | 1 | | 3 | | | | 2 | 1 | | | | 3 | 3 | | | | | | 3 |
| Fracture | 2 | | 1 | 3 | | | | 3 | | | | | 3 | | | 3 | | | | 3 |
| Face: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 2 | | | 2 | | 1 | | | | | 1 | | 2 | 1 | 1 | | | | | 2 |
| Neck | 5 | | | 5 | | | 1 | 3 | 1 | | | | 5 | 3 | | 1 | | 1 | | 5 |
| Thorax: | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 11 | 1 | | 12 | 1 | | 1 | 8 | 1 | | 1 | | 12 | 11 | | | | | 1 | 12 |
| Penetrating | 5 | 1 | | 6 | | | | 6 | | | | | 6 | 2 | | 3 | | 1 | | 6 |
| Abdomen: | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 3 | 2 | | 5 | 1 | | | 2 | 2 | | | | 5 | 5 | | | | | | 5 |
| Penetrating | 5 | 1 | | 6 | | | | 3 | 3 | | | | 6 | | | 6 | | | | 6 |
| Back and hip, flesh | 2 | | | 2 | 1 | | | | 1 | | | | 2 | 1 | | | 1 | | | 2 |
| Shoulder: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 6 | | | 6 | 2 | 1 | 1 | 2 | | | | | 6 | 5 | | | | 1 | | 6 |
| Arm: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 6 | 1 | | 7 | 4 | | | 2 | 1 | | | | 7 | 7 | | | | | | 7 |
| Fracture | 1 | | | 1 | | | | | 1 | | | | 1 | | 1 | | | | | 1 |
| Elbow joint | 1 | | | 1 | | | | 1 | | | | | 1 | | | | | 1 | | 1 |
| Forearm: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 5 | | | 5 | 1 | 1 | | 2 | 1 | | | | 5 | 5 | | | | | | 5 |
| Fracture | 3 | | | 3 | | | | 3 | | | | | 3 | 2 | 1 | | | | | 3 |
| Wrist joint | 1 | | | 1 | | | | 1 | | | | | 1 | 1 | | | | | | 1 |
| Hand, flesh | 26 | 5 | | 31 | | | 2 | 21 | 4 | | 2 | 2 | 31 | 31 | | | | | | 31 |
| Carpus and metacarpus, fracture | 3 | | | 3 | | | 1 | 1 | 1 | | | | 3 | 2 | 1 | | | | | 3 |
| Fingers, fracture | 26 | 3 | | 29 | 1 | | 6 | 18 | 4 | | | | 29 | 20 | 5 | | 4 | | | 29 |
| Thigh: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 16 | 6 | | 22 | | 3 | 1 | 12 | 5 | 1 | | | 22 | 16 | 1 | 1 | 2 | 2 | | 22 |
| Fracture, middle third | | 1 | | 1 | | | | 1 | | | | | 1 | | | | | 1 | | 1 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kneejoint | 1 | ...... | .... | 1 | ...... | .... | ...... | 1 | .... | .... | .... | .... | 1 | 1 | ...... | ...... | ...... | ...... | ...... | 1 |
| Leg: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 18 | 4 | .... | 22 | 5 | .... | 1 | 13 | 2 | 1 | .... | .... | 22 | 18 | ...... | ...... | 1 | 3 | ...... | 22 |
| Fracture | 1 | 1 | .... | 2 | ...... | .... | 1 | 1 | .... | .... | .... | .... | 2 | 2 | ...... | ...... | ...... | ...... | ...... | 2 |
| Ankle joint | 1 | ...... | .... | 1 | ...... | .... | 1 | ...... | .... | .... | .... | .... | 1 | 1 | ...... | ...... | ...... | ...... | ...... | 1 |
| Foot, flesh | 16 | 5 | .... | 21 | 1 | .... | 6 | 8 | 6 | .... | .... | .... | 21 | 17 | ...... | ...... | 2 | 1 | 1 | 21 |
| Tarsus and metatarsus, fracture | 4 | 1 | .... | 5 | ...... | .... | 1 | 4 | .... | .... | .... | .... | 5 | 4 | ...... | ...... | ...... | 1 | ...... | 5 |
| Toes, fracture | 5 | ...... | .... | 5 | ...... | .... | ...... | 5 | .... | .... | .... | .... | 5 | 4 | ...... | ...... | ...... | 1 | ...... | 5 |
| Unknown | 2 | ...... | .... | 2 | ...... | .... | ...... | 2 | .... | .... | .... | .... | 2 | 1 | ...... | 1 | ...... | ...... | ...... | 2 |
| Total | 179 | 33 | 1 | 213 | 17 | 6 | 23 | 125 | 34 | 2 | 4 | 2 | 213 | 163 | 10 | 15 | 10 | 13 | [1] 2 | 213 |

[1] On December 31, 1899, there remained on sick report 20 cases, but since that date 14 cases have been returned to duty and 4 discharged on certificates of disability.

## II.—REGULAR ARMY, 1899.

### (b) *Gunshot wounds received in action.*

| Character and location of wound. | Nature of missile. | | | | | | | | | | | Disposition. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Jacket of bullet. | Cartridge shell. | Shell. | Canister. | Splinters. | Explosion of primer. | Total. | Duty. | Certificate of disability. | Died. | Discharged by order. | Expiration of service. | Death, other causes. | Remaining last report. | Total. |
| Head: | | | | | | | | | | | | | | | | | | | |
| Flesh | 17 | 8 | | 10 | 1 | | 1 | | | | 37 | 37 | | | | | | | 37 |
| Fracture | 6 | 3 | | | | | 1 | | | | 10 | 3 | 3 | 3 | | | 1 | | 10 |
| Face: | | | | | | | | | | | | | | | | | | | |
| Flesh | 6 | 3 | | 6 | | | | | | | 15 | 14 | | | 1 | | | | 15 |
| Fracture | 4 | 3 | | 1 | | | | | | | 8 | 1 | 4 | 2 | | | 1 | | 8 |
| Neck | 11 | 3 | | 2 | | | | | | | 16 | 12 | 3 | 1 | | | | | 16 |
| Spine, fracture | 2 | 2 | 1 | | | | | | | | 5 | | 1 | 4 | | | | | 5 |
| Thorax: | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 10 | 9 | | 4 | | | | | | | 23 | 21 | 1 | | | | | 1 | 23 |
| Penetrating | 15 | 15 | | 4 | | | | | | | 34 | 17 | 7 | 8 | 1 | | | 1 | 34 |
| Abdomen: | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 6 | 1 | | 2 | | | | | | | 9 | 8 | 1 | | | | | | 9 |
| Penetrating | 13 | 3 | | 2 | | | | | | | 18 | 4 | 3 | 10 | 1 | | | | 18 |
| Pelvis, fracture | 1 | | | 2 | | | | | | | 3 | 2 | | 1 | | | | | 3 |
| Back and hip, flesh | 10 | 10 | 1 | 1 | | | 3 | | | | 25 | 22 | 3 | | | | | | 25 |
| Perineum, genital and urinary organs | 3 | 1 | | 1 | | | | | | | 5 | 5 | | | | | | | 5 |
| Shoulder: | | | | | | | | | | | | | | | | | | | |
| Flesh | 11 | 10 | | 7 | | | 1 | | | | 29 | 25 | 2 | | 1 | | 1 | | 29 |
| Joint | 3 | 2 | | | | | | | | | 5 | 3 | 2 | | | | | | 5 |
| Arm: | | | | | | | | | | | | | | | | | | | |
| Flesh | 23 | 11 | 1 | 9 | | | | | 1 | | 45 | 39 | 4 | 1 | | 1 | | | 45 |
| Fracture | 11 | 2 | | | | | | | | | 13 | 8 | 5 | | | | | | 13 |
| Elbow joint | 3 | 3 | | | | | | | | | 6 | 3 | 3 | | | | | | 6 |
| Forearm: | | | | | | | | | | | | | | | | | | | |
| Flesh | 30 | 13 | | 9 | | | 1 | | | | 53 | 52 | 1 | | | | | | 53 |
| Fracture | 3 | 6 | | 2 | | | | | | | 11 | 6 | 4 | | 1 | | | | 11 |
| Wrist joint | | | | | | | | | | | | | | | | | | | |
| Hand, flesh | 20 | 7 | 1 | 5 | | 1 | | | | 1 | 35 | 34 | | | | 1 | | | 35 |
| Carpus and metacarpus, fracture | 1 | 3 | | 1 | | | | | | | 5 | 3 | 2 | | | | | | 5 |
| Fingers, fracture | 4 | 3 | | 5 | | | | | | | 12 | 12 | | | | | | | 12 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hip joint | ...... | 1 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 | ...... | 1 | ...... | ...... | ...... | ...... | ...... | 1 |
| Thigh: | | | | | | | | | | | | | | | | | | | |
| Flesh | 72 | 40 | 1 | 17 | ...... | ...... | 2 | ...... | ...... | ...... | 132 | 110 | 18 | 4 | 8 | ...... | ...... | 2 | 132 |
| Fracture upper third | 1 | 2 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 3 | 2 | ...... | 1 | ...... | ...... | ...... | ...... | 3 |
| Fracture middle third | 6 | 2 | ...... | ...... | ...... | ...... | ...... | 1 | ...... | ...... | 9 | 2 | 5 | 1 | 1 | ...... | ...... | ...... | 9 |
| Fracture lower third | 3 | 4 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 7 | 2 | 4 | ...... | ...... | ...... | ...... | 1 | 7 |
| Kneejoint | 3 | 3 | ...... | 1 | ...... | ...... | ...... | ...... | ...... | ...... | 7 | 1 | 5 | 1 | ...... | ...... | ...... | ...... | 7 |
| Leg: | | | | | | | | | | | | | | | | | | | |
| Flesh | 37 | 15 | 1 | 11 | ...... | ...... | ...... | ...... | ...... | ...... | 64 | 58 | 4 | ...... | 1 | 1 | ...... | ...... | 64 |
| Fracture | 13 | 8 | ...... | 2 | ...... | ...... | 1 | ...... | ...... | ...... | 24 | 12 | 7 | 4 | 1 | ...... | ...... | ...... | 24 |
| Ankle joint | 1 | 2 | ...... | 1 | ...... | ...... | ...... | ...... | ...... | ...... | 4 | 2 | 2 | ...... | ...... | ...... | ...... | ...... | 4 |
| Foot, flesh | 11 | 7 | 1 | 6 | ...... | ...... | ...... | ...... | ...... | ...... | 25 | 20 | 3 | ...... | 1 | ...... | ...... | 1 | 25 |
| Tarsus and metatarsus, fracture | 4 | 1 | ...... | 2 | ...... | ...... | ...... | ...... | ...... | ...... | 7 | 5 | 2 | ...... | ...... | ...... | ...... | ...... | 7 |
| Toes, fracture | 6 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 6 | 5 | ...... | ...... | 1 | ...... | ...... | ...... | 6 |
| Unknown | 1 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 1 | 1 | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| Total | 371 | 206 | 7 | 118 | 1 | 1 | 10 | 1 | 1 | 1 | 712 | 551 | 95 | 41 | 13 | 3 | 8 | [1]6 | 712 |

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[1] On December 31, 1899, there remained on sick report 100 cases, but since that date 52 cases were returned to duty, 39 discharged for disability, 2 discharged on account of expiration of term of service, and 1 died—the last a case of kneejoint injury.

## II.—REGULAR ARMY, 1899.

### (c) *Gunshot wounds other than battle wounds.*

| Character and location of wound. | How received. | | | | | Nature of missile. | | | | | | | | | | Disposition. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In line of duty. | Not in line of duty. | Suicidal. | Homicidal. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. | Small shot. | Shell. | Shrapnel. | Explosion of cartridge. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Remaining last report. | Total. |
| Head: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 1 | | | | 1 | | | | 1 | | | | | | 1 | 1 | | | | | 1 |
| Fracture | | | | 1 | 1 | | | | | 1 | | | | | 1 | | | 1 | | | 1 |
| Face: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 5 | 2 | | | 7 | 1 | 1 | | 1 | 2 | | 1 | | 1 | 7 | 7 | | | | | 7 |
| Fracture | 1 | 2 | | | 3 | | | | 2 | 1 | | | | | 3 | 2 | 1 | | | | 3 |
| Neck | 1 | 3 | | | 4 | | | 1 | 3 | | | | | | 4 | 2 | | 2 | | | 4 |
| Spine, fracture | 1 | 2 | | | 3 | | | | 3 | | | | | | 3 | | | 3 | | | 3 |
| Thorax: | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 8 | 3 | | | 11 | 3 | 1 | 1 | 2 | 4 | | | | | 11 | 11 | | | | | 11 |
| Penetrating | 5 | 3 | 3 | 1 | 12 | | | 4 | 6 | 2 | | | | | 12 | 6 | 1 | 5 | | | 12 |
| Abdomen: | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | | | | | | | | | | | | | | | | | | | | | |
| Penetrating | 3 | 1 | | 1 | 5 | | 1 | 2 | 1 | 1 | | | | | 5 | | 1 | 4 | | | 5 |
| Pelvis, fracture | | | | | | | | | | | | | | | | | | | | | |
| Back and hip, flesh | 2 | | | | 2 | | 1 | | | 1 | | | | | 2 | 2 | | | | | 2 |
| Perineum, genital and urinary organs | 1 | 1 | | | 2 | | | | | 2 | | | | | 2 | 2 | | | | | 2 |
| Shoulder: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 4 | 4 | | | 8 | 2 | 1 | | 4 | 1 | | | | | 8 | 8 | | | | | 8 |
| Fracture clavicle or scapula | | | | | | | | | | | | | | | | | | | | | |
| Joint | 1 | | | | 1 | | | 1 | | | | | | | 1 | 1 | | | | | 1 |
| Arm: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 3 | 3 | | | 6 | | 1 | | 3 | 2 | | | | | 6 | 5 | 1 | | | | 6 |
| Fracture | 3 | | 1 | | 4 | | | 3 | | 1 | | | | | 4 | 1 | 3 | | | | 4 |
| Elbow joint | 1 | | | | 1 | | | | 1 | | | | | | 1 | | 1 | | | | 1 |
| Forearm: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 10 | 2 | | | 12 | 1 | 1 | 3 | 5 | 2 | | | | | 12 | 10 | 1 | 1 | | | 12 |
| Fracture | 2 | 3 | | | 5 | | | 1 | 2 | 1 | | | | 1 | 5 | 4 | 1 | | | | 5 |
| Wrist joint | 1 | | | | 1 | | | 1 | | | | | | | 1 | | 1 | | | | 1 |
| Hand, flesh | 29 | 12 | | | 41 | 1 | 2 | 9 | 16 | 13 | | | | | 41 | 39 | 1 | | 1 | | 41 |
| Carpus and metacarpus, fracture | 7 | 3 | | | 10 | | | 5 | 3 | 1 | 1 | | | | 10 | 8 | 1 | 1 | | | 10 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fingers, fracture | 50 | 11 | .... | .... | 61 | ...... | ...... | 25 | 28 | 7 | 1 | .... | .... | .... | 61 | 48 | 13 | ...... | ...... | ...... | 61 |
| Thigh: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 15 | 4 | .... | .... | 19 | ...... | ...... | 3 | 10 | 5 | .... | .... | 1 | .... | 19 | 18 | ...... | ...... | ...... | 1 | 19 |
| Fracture upper third | 2 | ...... | .... | .... | 2 | ...... | ...... | 1 | ...... | 1 | .... | .... | .... | .... | 2 | ...... | 2 | ...... | ...... | ...... | 2 |
| Kneejoint | 1 | ...... | .... | .... | 1 | ...... | ...... | 1 | ...... | ...... | .... | .... | .... | .... | 1 | 1 | ...... | ...... | ...... | ...... | 1 |
| Leg: | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 17 | 2 | .... | .... | 19 | ...... | ...... | 5 | 6 | 8 | .... | .... | .... | .... | 19 | 17 | 2 | ...... | ...... | ...... | 19 |
| Fracture | 6 | 2 | .... | .... | 8 | ...... | ...... | 2 | 4 | 2 | .... | .... | .... | .... | 8 | 6 | 1 | ...... | 1 | ...... | 8 |
| Foot, flesh | 33 | 1 | .... | .... | 34 | ...... | ...... | 20 | 11 | 3 | .... | .... | .... | .... | 34 | 27 | 2 | 1 | 3 | 1 | 34 |
| Tarsus and metatarsus, fracture | 10 | ...... | .... | .... | 10 | ...... | 1 | 6 | 2 | 1 | .... | .... | .... | .... | 10 | 8 | 1 | ...... | ...... | 1 | 10 |
| Toes, fracture | 8 | ...... | .... | .... | 8 | ...... | ...... | 5 | 2 | 1 | .... | .... | .... | .... | 8 | 8 | ...... | ...... | ...... | ...... | 8 |
| Unknown | 1 | 1 | .... | .... | 2 | ...... | ...... | ...... | 1 | 1 | .... | .... | .... | .... | 2 | 2 | ...... | ...... | ...... | ...... | 2 |
| Total | 232 | 65 | 4 | 3 | 304 | 8 | 10 | 99 | 117 | 64 | 2 | 1 | 1 | 2 | 304 | 244 | 34 | 18 | 5 | [1]3 | 304 |

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[1] On December 31, 1899, there remained on sick report 50 cases, but since that date 33 cases have been returned to duty, 13 discharged for disability, and 1 by order.

## III.—VOLUNTEER ARMY, 1899

### (*a*) *All gunshot wounds.*

| Character and location of wound. | How received. | | | | | Nature of missile. | | | | | | | | | | | Disposition. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In action. | Not in action. In line of duty. | Not in action. Not in line of duty. | Not in action. Suicidal. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. | Shell. | Shrapnel. | Splinter. | Explosion of gun. | Explosion of cartridge. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Mustered out. | Death, other causes. | Remaining last report. | Total. |
| **Head:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 47 | 2 | 1 | | 50 | 16 | 3 | | 27 | 1 | | | 1 | 2 | | 50 | 46 | | | 2 | 2 | | | 50 |
| Fracture | 15 | 2 | | 1 | 18 | 8 | 3 | | 7 | | | | | | | 18 | 2 | 1 | 11 | 2 | 1 | | 1 | 18 |
| **Face:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 29 | 2 | | | 31 | 11 | 4 | | 13 | | 1 | | | 1 | 1 | 31 | 24 | 2 | | 4 | 1 | | | 31 |
| Fracture | 16 | | | | 16 | 9 | 3 | | 4 | | | | | | | 16 | 4 | 3 | | 5 | 4 | | | 16 |
| **Neck** | 35 | 5 | | | 40 | 18 | 8 | 1 | 12 | 1 | | | | | | 40 | 27 | | 9 | 2 | 2 | | | 40 |
| **Spine, fracture** | 3 | | | | 3 | 1 | 1 | | 1 | | | | | | | 3 | | 1 | 1 | | 1 | | | 3 |
| **Thorax:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 38 | 11 | 1 | | 50 | 11 | 12 | 1 | 23 | 1 | | | | 1 | 1 | 50 | 42 | | 1 | 3 | 3 | | 1 | 50 |
| Penetrating | 61 | 5 | 1 | | 67 | 33 | 17 | | 17 | | | | | | | 67 | 26 | 5 | 23 | 10 | 3 | | | 67 |
| **Abdomen:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 24 | 3 | 2 | | 29 | 9 | 4 | | 14 | 2 | | | | | | 29 | 29 | | | | | | | 29 |
| Penetrating | 31 | 5 | 1 | | 37 | 18 | 5 | | 11 | 3 | | | | | | 37 | 6 | | 27 | | 3 | | 1 | 37 |
| **Pelvis, fracture** | 1 | | | | 1 | | | | 1 | | | | | | | 1 | | | 1 | | | | | 1 |
| **Back and hip, flesh** | 49 | 2 | | | 51 | 24 | 14 | | 12 | 1 | | | | | | 51 | 39 | 2 | | 8 | 1 | 1 | | 51 |
| **Perineum, genital and urinary organs** | 7 | | | | 7 | | 3 | | 4 | | | | | | | 7 | 3 | | 3 | | 1 | | | 7 |
| **Shoulder:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 68 | 6 | | | 74 | 31 | 17 | 1 | 23 | | | 1 | | 1 | | 74 | 58 | 2 | 1 | 8 | 5 | | | 74 |
| Fracture clavicle or scapula | 3 | | | | 3 | | 1 | | 2 | | | | | | | 3 | 2 | | | 1 | | | | 3 |
| Joint | 3 | | | | 3 | | 2 | | 1 | | | | | | | 3 | | 1 | 1 | | 1 | | | 3 |
| **Arm:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 76 | 6 | 1 | | 83 | 42 | 12 | | 28 | 1 | | | | | | 83 | 71 | | | 9 | 3 | | | 83 |
| Fracture | 14 | 1 | | | 15 | 5 | 8 | | 1 | 1 | | | | | | 15 | 4 | 2 | 3 | 4 | 2 | | | 15 |
| **Elbow joint** | 2 | 1 | | | 3 | 1 | 1 | | 1 | | | | | | | 3 | | 1 | | 1 | 1 | | | 3 |
| **Forearm:** | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 62 | 5 | | | 67 | 28 | 13 | | 24 | 1 | | | | 1 | | 67 | 61 | 2 | | 4 | | | | 67 |
| Fracture | 18 | 3 | | | 21 | 4 | 9 | | 7 | | | 1 | | | | 21 | 13 | 3 | | 3 | 2 | | | 21 |
| **Wrist joint** | | 1 | | | 1 | | | | 1 | | | | | | | 1 | 1 | | | | | | | 1 |
| **Hand, flesh** | 60 | 26 | 5 | | 91 | 21 | 9 | 3 | 48 | 4 | | | | 4 | 2 | 91 | 86 | 1 | | 2 | 2 | | | 91 |
| **Carpus and metacarpus, fracture** | 3 | 3 | | | 6 | 1 | | 1 | 3 | 1 | | | | | | 6 | 5 | 1 | | | | | | 6 |

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fingers, fracture | 3 | 26 | 3 | .... | 32 | 1 | 2 | 6 | 19 | 4 | .... | .... | .... | .... | .... | 32 | 22 | 6 | .... | 4 | .... | .... | .... | 32 |
| Thigh: | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 189 | 16 | 6 | .... | 211 | 79 | 64 | 2 | 59 | 5 | 2 | .... | .... | .... | .... | 211 | 166 | 7 | 3 | 19 | 15 | .... | 1 | 211 |
| Fracture upper third | 12 | .... | .... | .... | 12 | 8 | 4 | .... | .... | .... | .... | .... | .... | .... | .... | 12 | 3 | .... | 2 | 5 | 2 | .... | .... | 12 |
| Fracture middle third | 7 | .... | 1 | .... | 8 | 6 | .... | .... | 2 | .... | .... | .... | .... | .... | .... | 8 | 2 | .... | 1 | 2 | 2 | .... | 1 | 8 |
| Fracture lower third | 2 | .... | .... | .... | 2 | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | .... | 1 | .... | 1 | .... | .... | .... | 2 |
| Kneejoint | 15 | 1 | .... | .... | 16 | 7 | 4 | .... | 5 | .... | .... | .... | .... | .... | .... | 16 | 6 | 3 | .... | 4 | 3 | .... | .... | 16 |
| Leg: | | | | | | | | | | | | | | | | | | | | | | | | |
| Flesh | 81 | 18 | 4 | .... | 103 | 45 | 14 | 1 | 40 | 2 | 1 | .... | .... | .... | .... | 103 | 88 | 2 | 1 | 5 | 7 | .... | .... | 103 |
| Fracture | 20 | 1 | 1 | .... | 22 | 7 | 11 | 1 | 2 | .... | 1 | .... | .... | .... | .... | 22 | 8 | 4 | 1 | 4 | 5 | .... | .... | 22 |
| Ankle joint | 1 | 1 | .... | .... | 2 | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | 2 | 2 | .... | .... | .... | .... | .... | .... | 2 |
| Foot, flesh | 40 | 16 | 5 | .... | 61 | 22 | 4 | 6 | 23 | 6 | .... | .... | .... | .... | .... | 61 | 53 | .... | .... | 4 | 3 | .... | 1 | 61 |
| Tarsus and metatarsus, fracture | 8 | 4 | 1 | .... | 13 | 3 | 3 | 1 | 6 | .... | .... | .... | .... | .... | .... | 13 | 11 | 1 | .... | .... | 1 | .... | .... | 13 |
| Toes, fracture | 1 | 5 | .... | .... | 6 | .... | .... | .... | 6 | .... | .... | .... | .... | .... | .... | 6 | 5 | .... | .... | .... | 1 | .... | .... | 6 |
| Unknown | 3 | 2 | .... | .... | 5 | 1 | .... | .... | 4 | .... | .... | .... | .... | .... | .... | 5 | 4 | .... | 1 | .... | .... | .... | .... | 5 |
| Total | 1,047 | 179 | 33 | 1 | 1,260 | 472 | 255 | 25 | 452 | 34 | 5 | 2 | 1 | 10 | 4 | 1,260 | 919 | 51 | 90 | 116 | 77 | 1 | [1]6 | 1,260 |

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[1] On December 31, 1899, there remained on sick report 66 cases, but since that date 49 cases have been returned to duty, 9 discharged on account of disability, and 2 have ended fatally. The deaths include 1 case of fracture of the middle third of the femur and 1 of the 11 fatal cases of fracture of the cranium.

## III.—VOLUNTEER ARMY, 1899.

### (*b*) *Gunshot wounds received in action.*

| Character and location of wound. | Nature of missile. | | | | | | | | | Disposition. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Shell. | Shrapnel. | Splinters. | Explosion of gun. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Mustered out. | Death, other causes. | Remaining last report. | Total. |
| Head: | | | | | | | | | | | | | | | | | |
| Flesh | 16 | 3 | | 25 | | | 1 | 2 | 47 | 43 | | | 2 | 2 | | | 47 |
| Fracture | 8 | 3 | | 4 | | | | | 15 | 2 | 1 | 8 | 2 | 1 | | 1 | 15 |
| Face: | | | | | | | | | | | | | | | | | |
| Flesh | 11 | 3 | | 13 | 1 | | | 1 | 29 | 23 | 1 | | 4 | 1 | | | 29 |
| Fracture | 9 | 3 | | 4 | | | | | 16 | 4 | 3 | | 5 | 4 | | | 16 |
| Neck | 18 | 8 | | 9 | | | | | 35 | 24 | | 8 | 2 | 1 | | | 35 |
| Spine, fracture | 1 | 1 | | 1 | | | | | 3 | | 1 | 1 | | 1 | | | 3 |
| Thorax: | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 10 | 12 | | 15 | | | | 1 | 38 | 31 | | 1 | 3 | 3 | | | 38 |
| Penetrating | 33 | 17 | | 11 | | | | | 61 | 24 | 5 | 20 | 10 | 2 | | | 61 |
| Abdomen: | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 8 | 4 | | 12 | | | | | 24 | 24 | | | | | | | 24 |
| Penetrating | 18 | 5 | | 8 | | | | | 31 | 6 | | 21 | | 3 | | 1 | 31 |
| Pelvis, fracture | | | | 1 | | | | | 1 | | | 1 | | | | | 1 |
| Back and hip, flesh | 23 | 14 | | 12 | | | | | 49 | 38 | 2 | | 7 | 1 | 1 | | 49 |
| Perineum, genital and urinary organs | | 3 | | 4 | | | | | 7 | 3 | | 3 | | 1 | | | 7 |
| Shoulder: | | | | | | | | | | | | | | | | | |
| Flesh | 29 | 16 | | 21 | | 1 | | 1 | 68 | 53 | 2 | 1 | 8 | 4 | | | 68 |
| Fracture, clavicle and scapula | | 1 | | 2 | | | | | 3 | 2 | | | 1 | | | | 3 |
| Joint | | 2 | | 1 | | | | | 3 | | 1 | 1 | | 1 | | | 3 |
| Arm: | | | | | | | | | | | | | | | | | |
| Flesh | 38 | 12 | | 26 | | | | | 76 | 64 | | | 9 | 3 | | | 76 |
| Fracture | 5 | 8 | | 1 | | | | | 14 | 4 | 1 | 3 | 4 | 2 | | | 14 |
| Elbow joint | 1 | 1 | | | | | | | 2 | | 1 | | 1 | | | | 2 |
| Forearm: | | | | | | | | | | | | | | | | | |
| Flesh | 27 | 12 | | 22 | | | | 1 | 62 | 56 | 2 | | 4 | | | | 62 |
| Fracture | 4 | 9 | | 4 | | 1 | | | 18 | 11 | 2 | | 3 | 2 | | | 18 |
| Hand, flesh | 21 | 9 | 1 | 27 | | | | 2 | 60 | 55 | 1 | | 2 | 2 | | | 60 |
| Carpus and metacarpus, fracture | 1 | | | 2 | | | | | 3 | 3 | | | | | | | 3 |
| Fingers, fracture | | 2 | | 1 | | | | | 3 | 2 | 1 | | | | | | 3 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thigh: | | | | | | | | | | | | | | | | | |
| Flesh | 79 | 61 | 1 | 47 | 1 | ...... | ...... | ...... | 189 | 150 | 6 | 2 | 17 | 13 | ...... | 1 | 189 |
| Fracture, upper third | 8 | 4 | .... | ...... | .... | ...... | ...... | ...... | 12 | 3 | ...... | 2 | 5 | 2 | ...... | ...... | 12 |
| Fracture, middle third | 6 | ...... | .... | 1 | .... | ...... | ...... | ...... | 7 | 2 | ...... | [1]1 | 2 | 1 | ...... | 1 | 7 |
| Fracture, lower third | 2 | ...... | .... | ...... | .... | ...... | ...... | ...... | 2 | ...... | 1 | ...... | 1 | ...... | ...... | ...... | 2 |
| Kneejoint | 7 | 4 | .... | 4 | .... | ...... | ...... | ...... | 15 | 5 | 3 | ...... | 4 | 3 | ...... | ...... | 15 |
| Leg: | | | | | | | | | | | | | | | | | |
| Flesh | 40 | 14 | .... | 27 | .... | ...... | ...... | ...... | 81 | 70 | 2 | 1 | 4 | 4 | ...... | ...... | 81 |
| Fracture | 7 | 11 | .... | 1 | 1 | ...... | ...... | ...... | 20 | 6 | 4 | 1 | 4 | 5 | ...... | ...... | 20 |
| Ankle joint | ...... | ...... | .... | 1 | .... | ...... | ...... | ...... | 1 | 1 | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| Foot, flesh | 21 | 4 | .... | 15 | .... | ...... | ...... | ...... | 40 | 36 | ...... | ...... | 2 | 2 | ...... | ...... | 40 |
| Tarsus and metatarsus, fracture | 3 | 3 | .... | 2 | .... | ...... | ...... | ...... | 8 | 7 | 1 | ...... | ...... | ...... | ...... | ...... | 8 |
| Toes, fracture | ...... | ...... | .... | 1 | .... | ...... | ...... | ...... | 1 | 1 | ...... | ...... | ...... | ...... | ...... | ...... | 1 |
| Unknown | 1 | ...... | .... | 2 | .... | ...... | ...... | ...... | 3 | 3 | ...... | ...... | ...... | ...... | ...... | ...... | 3 |
| Total | 455 | 249 | 2 | 327 | 3 | 2 | 1 | 8 | 1,047 | 756 | 41 | 75 | 106 | 64 | 1 | [1]4 | 1,047 |

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[1] On December 31, 1899, there remained on sick report 46 cases; but since that date 35 cases have been returned to duty, 5 discharged on account of disability, and 2 have died. The fatal cases comprise 1 case of fracture of the middle third of the femur and 1 of the 8 fatal fractures of the cranium.

## III.—VOLUNTEER ARMY, 1899.

### (*b*) *Gunshot wounds received in action.*

| Character and location of wound. | Nature of missile. | | | | | | | | | Disposition. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Shell. | Shrapnel. | Splinters. | Explosion of gun. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Mustered out. | Death, other causes. | Remaining last report. | Total. |
| Head: | | | | | | | | | | | | | | | | | |
| Flesh | 16 | 3 | .... | 25 | .... | ...... | 1 | 2 | 47 | 43 | ...... | ...... | 2 | 2 | ...... | ...... | 47 |
| Fracture | 8 | 3 | .... | 4 | .... | ...... | ...... | ...... | 15 | 2 | 1 | 8 | 2 | 1 | ...... | 1 | 15 |
| Face: | | | | | | | | | | | | | | | | | |
| Flesh | 11 | 3 | .... | 13 | 1 | ...... | ...... | 1 | 29 | 23 | 1 | ...... | 4 | 1 | ...... | ...... | 29 |
| Fracture | 9 | 3 | .... | 4 | .... | ...... | ...... | ...... | 16 | 4 | 3 | ...... | 5 | 4 | ...... | ...... | 16 |
| Neck | 18 | 8 | .... | 9 | .... | ...... | ...... | ...... | 35 | 24 | ...... | 8 | 2 | 1 | ...... | ...... | 35 |
| Spine, fracture | 1 | 1 | .... | 1 | .... | ...... | ...... | ...... | 3 | ...... | 1 | 1 | ...... | 1 | ...... | ...... | 3 |
| Thorax: | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 10 | 12 | .... | 15 | .... | ...... | ...... | 1 | 38 | 31 | ...... | 1 | 3 | 3 | ...... | ...... | 38 |
| Penetrating | 33 | 17 | .... | 11 | .... | ...... | ...... | ...... | 61 | 24 | 5 | 20 | 10 | 2 | ...... | ...... | 61 |
| Abdomen: | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 8 | 4 | .... | 12 | .... | ...... | ...... | ...... | 24 | 24 | ...... | ...... | ...... | ...... | ...... | ...... | 24 |
| Penetrating | 18 | 5 | .... | 8 | .... | ...... | ...... | ...... | 31 | 6 | ...... | 21 | ...... | 3 | ...... | 1 | 31 |
| Pelvis, fracture | ...... | ...... | .... | 1 | .... | ...... | ...... | ...... | 1 | ...... | ...... | 1 | ...... | ...... | ...... | ...... | 1 |
| Back and hip, flesh | 23 | 14 | .... | 12 | .... | ...... | ...... | ...... | 49 | 38 | 2 | ...... | 7 | 1 | 1 | ...... | 49 |
| Perineum, genital and urinary organs | ...... | 3 | .... | 4 | .... | ...... | ...... | ...... | 7 | 3 | ...... | 3 | ...... | 1 | ...... | ...... | 7 |
| Shoulder: | | | | | | | | | | | | | | | | | |
| Flesh | 29 | 16 | .... | 21 | .... | 1 | ...... | 1 | 68 | 53 | 2 | 1 | 8 | 4 | ...... | ...... | 68 |
| Fracture, clavicle and scapula | ...... | 1 | .... | 2 | .... | ...... | ...... | ...... | 3 | 2 | ...... | ...... | 1 | ...... | ...... | ...... | 3 |
| Joint | ...... | 2 | .... | 1 | .... | ...... | ...... | ...... | 3 | ...... | 1 | 1 | ...... | 1 | ...... | ...... | 3 |
| Arm: | | | | | | | | | | | | | | | | | |
| Flesh | 38 | 12 | .... | 26 | .... | ...... | ...... | ...... | 76 | 64 | ...... | ...... | 9 | 3 | ...... | ...... | 76 |
| Fracture | 5 | 8 | .... | 1 | .... | ...... | ...... | ...... | 14 | 4 | 1 | 8 | 4 | 2 | ...... | ...... | 14 |
| Elbow joint | 1 | 1 | .... | ...... | .... | ...... | ...... | ...... | 2 | ...... | 1 | ...... | 1 | ...... | ...... | ...... | 2 |
| Forearm: | | | | | | | | | | | | | | | | | |
| Flesh | 27 | 12 | .... | 22 | .... | ...... | ...... | 1 | 62 | 56 | 2 | ...... | 4 | ...... | ...... | ...... | 62 |
| Fracture | 4 | 9 | .... | 4 | .... | 1 | ...... | ...... | 18 | 11 | 2 | ...... | 3 | 2 | ...... | ...... | 18 |
| Hand, flesh | 21 | 9 | 1 | 27 | .... | ...... | ...... | 2 | 60 | 55 | 1 | ...... | 2 | 2 | ...... | ...... | 60 |
| Carpus and metacarpus, fracture | 1 | ...... | .... | 2 | .... | ...... | ...... | ...... | 3 | 3 | ...... | ...... | ...... | ...... | ...... | ...... | 3 |
| Fingers, fracture | ...... | 2 | .... | 1 | .... | ...... | ...... | ...... | 3 | 2 | 1 | ...... | ...... | ...... | ...... | ...... | 3 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thigh: | | | | | | | | | | | | | | | | | |
| Flesh | 79 | 61 | 1 | 47 | 1 | | | | 189 | 150 | 6 | 2 | 17 | 13 | | 1 | 189 |
| Fracture, upper third | 8 | 4 | | | | | | | 12 | 3 | | 2 | 5 | 2 | | | 12 |
| Fracture, middle third | 6 | | | 1 | | | | | 7 | 2 | | [1]1 | 2 | 1 | | 1 | 7 |
| Fracture, lower third | 2 | | | | | | | | 2 | | 1 | | 1 | | | | 2 |
| Kneejoint | 7 | 4 | | 4 | | | | | 15 | 5 | 8 | | 4 | 3 | | | 15 |
| Leg: | | | | | | | | | | | | | | | | | |
| Flesh | 40 | 14 | | 27 | | | | | 81 | 70 | 2 | 1 | 4 | 4 | | | 81 |
| Fracture | 7 | 11 | | 1 | 1 | | | | 20 | 6 | 4 | 1 | 4 | 5 | | | 20 |
| Ankle joint | | | | 1 | | | | | 1 | 1 | | | | | | | 1 |
| Foot, flesh | 21 | 4 | | 15 | | | | | 40 | 36 | | | 2 | 2 | | | 40 |
| Tarsus and metatarsus, fracture | 3 | 3 | | 2 | | | | | 8 | 7 | 1 | | | | | | 8 |
| Toes, fracture | | | | 1 | | | | | 1 | 1 | | | | | | | 1 |
| Unknown | 1 | | | 2 | | | | | 3 | 3 | | | | | | | 3 |
| Total | 455 | 249 | 2 | 327 | 3 | 2 | 1 | 8 | 1,047 | 756 | 41 | 75 | 106 | 64 | 1 | [1]4 | 1,047 |

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[1] On December 31, 1899, there remained on sick report 46 cases; but since that date 35 cases have been returned to duty, 5 discharged on account of disability, and 2 have died. The fatal cases comprise 1 case of fracture of the middle third of the femur and 1 of the 8 fatal fractures of the cranium.

## III.—VOLUNTEER ARMY, 1899.

### (c) *Gunshot wounds other than battle wounds.*

| Character and location of wound. | How received. | | | | Nature of missile. | | | | | | | | | Disposition. | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | In line of duty. | Not in line of duty. | Suicidal. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. | Shell. | Explosion of cartridge. | Explosion of gun. | Total. | Duty. | Certificates of disability. | Died. | Discharged by order. | Mustered out. | Remaining last report. | Total. |
| Head: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 2 | 1 | | 3 | | | | 2 | 1 | | | | 3 | 3 | | | | | | 3 |
| Fracture | 2 | | 1 | 3 | | | | 3 | | | | | 3 | | | 3 | | | | 3 |
| Face: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 2 | | | 2 | | 1 | | | | | 1 | | 2 | 1 | 1 | | | | | 2 |
| Neck | 5 | | | 5 | | | 1 | 3 | 1 | | | | 5 | 3 | | 1 | | 1 | | 5 |
| Thorax: | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 11 | 1 | | 12 | 1 | | 1 | 8 | 1 | | 1 | | 12 | 11 | | | | | 1 | 12 |
| Penetrating | 5 | 1 | | 6 | | | | 6 | | | | | 6 | 2 | | 3 | | 1 | | 6 |
| Abdomen: | | | | | | | | | | | | | | | | | | | | |
| Nonpenetrating | 3 | 2 | | 5 | 1 | | | 2 | 2 | | | | 5 | 5 | | | | | | 5 |
| Penetrating | 5 | 1 | | 6 | | | | 3 | 3 | | | | 6 | | | 6 | | | | 6 |
| Back and hip, flesh | 2 | | | 2 | 1 | | | | 1 | | | | 2 | 1 | | | 1 | | | 2 |
| Shoulder: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 6 | | | 6 | 2 | 1 | 1 | 2 | | | | | 6 | 5 | | | | 1 | | 6 |
| Arm: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 6 | 1 | | 7 | 4 | | | 2 | 1 | | | | 7 | 7 | | | | | | 7 |
| Fracture | 1 | | | 1 | | | | | 1 | | | | 1 | | 1 | | | | | 1 |
| Elbow joint | 1 | | | 1 | | | | 1 | | | | | 1 | | | | | 1 | | 1 |
| Forearm: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 5 | | | 5 | 1 | 1 | | 2 | 1 | | | | 5 | 5 | | | | | | 5 |
| Fracture | 3 | | | 3 | | | | 3 | | | | | 3 | 2 | 1 | | | | | 3 |
| Wrist joint | 1 | | | 1 | | | | 1 | | | | | 1 | 1 | | | | | | 1 |
| Hand, flesh | 26 | 5 | | 31 | | | 2 | 21 | 4 | | 2 | 2 | 31 | 31 | | | | | | 31 |
| Carpus and metacarpus, fracture | 3 | | | 3 | | | 1 | 1 | 1 | | | | 3 | 2 | 1 | | | | | 3 |
| Fingers, fracture | 26 | 3 | | 29 | 1 | | 6 | 18 | 4 | | | | 29 | 20 | 5 | | 4 | | | 29 |
| Thigh: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 16 | 6 | | 22 | | 3 | 1 | 12 | 5 | 1 | | | 22 | 16 | 1 | 1 | 2 | 2 | | 22 |
| Fracture, middle third | | 1 | | 1 | | | | 1 | | | | | 1 | | | | | 1 | | 1 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kneejoint | 1 | ...... | .... | 1 | ...... | .... | ...... | 1 | .... | .... | .... | .... | 1 | 1 | ...... | ...... | ...... | ...... | ...... | 1 |
| Leg: | | | | | | | | | | | | | | | | | | | | |
| Flesh | 18 | 4 | .... | 22 | 5 | .... | 1 | 13 | 2 | 1 | .... | .... | 22 | 18 | ...... | ...... | 1 | 3 | ...... | 22 |
| Fracture | 1 | 1 | .... | 2 | ...... | .... | 1 | 1 | .... | .... | .... | .... | 2 | 2 | ...... | ...... | ...... | ...... | ...... | 2 |
| Ankle joint | 1 | ...... | .... | 1 | ...... | .... | 1 | ...... | .... | .... | .... | .... | 1 | 1 | ...... | ...... | ...... | ...... | ...... | 1 |
| Foot, flesh | 16 | 5 | .... | 21 | 1 | .... | 6 | 8 | 6 | .... | .... | .... | 21 | 17 | ...... | ...... | 2 | 1 | 1 | 21 |
| Tarsus and metatarsus, fracture | 4 | 1 | .... | 5 | ...... | .... | 1 | 4 | .... | .... | .... | .... | 5 | 4 | ...... | ...... | ...... | 1 | ...... | 5 |
| Toes, fracture | 5 | ...... | .... | 5 | ...... | .... | ...... | 5 | .... | .... | .... | .... | 5 | 4 | ...... | ...... | ...... | 1 | ...... | 5 |
| Unknown | 2 | ...... | .... | 2 | ...... | .... | ...... | 2 | .... | .... | .... | .... | 2 | 1 | ...... | 1 | ...... | ...... | ...... | 2 |
| Total | 179 | 33 | 1 | 213 | 17 | 6 | 28 | 125 | 34 | 2 | 4 | 2 | 213 | 163 | 10 | 15 | 10 | 13 | [1] 2 | 213 |

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[1] On December 31, 1899, there remained on sick report 20 cases, but since that date 14 cases have been returned to duty and 4 discharged on certificates of disability.

## IV.—GUNSHOT WOUNDS WHICH TERMINATED FATALLY.

### (*a*) *Regular and Volunteer armies, 1899.*

| Character and location of wound. | How received. | | | | | | Nature of missile. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Not in action. | | | | | In action. | | | | | | Not in action. | | | |
| | In action. | In line of duty. | Not in line of duty. | Suicide. | Homicide. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Shell. | Canister. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. |
| Head, fracture | 10 | 2 | .... | 1 | 1 | 14 | 5 | 3 | .... | 2 | ... | ... | ... | .... | 3 | 1 |
| Face, fracture | 2 | .... | .... | ... | ... | 2 | 1 | 1 | .... | .... | ... | ... | ... | .... | .... | ... |
| Neck | 9 | 2 | 1 | ... | ... | 12 | 6 | .... | .... | 3 | ... | ... | ... | 2 | 1 | ... |
| Spine, fracture | 5 | 1 | 2 | ... | ... | 8 | 1 | 2 | 1 | 1 | ... | ... | ... | .... | 3 | ... |
| Thorax: | | | | | | | | | | | | | | | | |
| Nonpenetrating | 1 | .... | .... | ... | ... | [1]1 | 1 | .... | .... | .... | ... | ... | ... | .... | .... | ... |
| Penetrating | 28 | 5 | 1 | 1 | 1 | 36 | 10 | 12 | .... | 6 | ... | ... | ... | 1 | 5 | 2 |
| Abdomen, penetrating | 31 | 7 | 2 | ... | 1 | 41 | 19 | 6 | .... | 6 | ... | ... | 1 | 1 | 3 | 5 |
| Pelvis, fracture | 2 | .... | .... | ... | ... | 2 | .... | .... | .... | 2 | ... | ... | ... | .... | .... | ... |
| Perineum, genital and urinary organs | 3 | .... | .... | ... | ... | 3 | .... | 2 | .... | 1 | ... | ... | ... | .... | .... | ... |
| Shoulder: | | | | | | | | | | | | | | | | |
| Flesh | 1 | .... | .... | ... | ... | [2]1 | .... | 1 | .... | .... | ... | ... | ... | .... | .... | ... |
| Joint | 1 | .... | .... | ... | ... | 1 | .... | 1 | .... | .... | ... | ... | ... | .... | .... | ... |
| Arm: | | | | | | | | | | | | | | | | |
| Flesh | 1 | .... | .... | ... | ... | [3]1 | 1 | .... | .... | .... | ... | ... | ... | .... | .... | ... |
| Fracture | 3 | .... | .... | ... | ... | [4]3 | 2 | .... | .... | 1 | ... | ... | ... | .... | .... | ... |
| Forearm, flesh | .... | 1 | .... | ... | ... | [5]1 | .... | .... | .... | .... | ... | ... | ... | 1 | .... | ... |
| Carpus and metacarpus, fracture | .... | .... | 1 | ... | ... | [6]1 | .... | .... | .... | .... | ... | ... | ... | 1 | .... | ... |
| Thigh: | | | | | | | | | | | | | | | | |
| Flesh | 6 | 1 | .... | ... | ... | [7]7 | 2 | 3 | .... | 1 | ... | ... | ... | .... | 1 | ... |
| Fracture, upper third | 3 | .... | .... | ... | ... | 3 | 3 | .... | .... | .... | ... | ... | ... | .... | .... | ... |
| Fracture, middle third | 1 | .... | .... | ... | ... | 1 | .... | .... | .... | .... | ... | 1 | ... | .... | .... | ... |
| Leg: | | | | | | | | | | | | | | | | |
| Flesh | 1 | .... | .... | ... | ... | [8]1 | 1 | .... | .... | .... | ... | ... | ... | .... | .... | ... |
| Fracture | 5 | .... | .... | ... | ... | [9]5 | 1 | 3 | .... | .... | 1 | ... | ... | .... | .... | ... |
| Foot, flesh | .... | 1 | .... | ... | ... | [10]1 | .... | .... | .... | .... | ... | ... | ... | .... | 1 | ... |
| Unknown | .... | 1 | .... | ... | ... | 1 | .... | .... | .... | .... | ... | ... | ... | .... | 1 | ... |
| Total | 113 | 21 | 7 | 2 | 3 | 146 | 53 | 34 | 1 | 23 | 1 | 1 | 1 | 6 | 18 | 8 |

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[1] Died after an operation for traumatic aneurism.
[2] Hemorrhage from axillary artery.
[3] Died after an amputation at shoulder for injury to blood vessels.
[4] Septicæmia in 1 case; hemorrhage in 2 cases.
[5] Tetanus.
[6] Death after amputation at the shoulder joint for gangrene.
[7] Septic infection in 1 case; gangrene in 1 case; hemorrhage in 2 cases; not stated in 3 cases.
[8] Shock after operation on posterior tibial artery.
[9] Septic infection in 2 cases; tetanus in 1 case; immediate cause of death not stated in 2 cases.
[10] Tetanus.

## IV.—GUNSHOT WOUNDS WHICH TERMINATED FATALLY.

### (*b*) *Regular Army, 1899.*

| Character and location of wound. | How received. | | | | | | Nature of missile. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Not in action. | | | | | In action. | | | | | | Not in action. | | | |
| | In action. | In line of duty. | Not in line of duty. | Suicide. | Homicide. | Total. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Shell. | Canister. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. |
| Head, fracture | 3 | | | | 1 | 4 | 1 | 2 | | | | | | | | 1 |
| Face, fracture | 2 | | | | | 2 | 1 | 1 | | | | | | | | |
| Neck | 1 | 1 | 1 | | | 3 | 1 | | | | | | | 1 | 1 | |
| Spine, fracture | 4 | 1 | 2 | | | 7 | 1 | 2 | 1 | | | | | | 3 | |
| Thorax, penetrating | 8 | 3 | | 1 | 1 | 13 | 3 | 5 | | | | | | 1 | 2 | 2 |
| Abdomen, penetrating | 10 | 2 | 1 | | 1 | 14 | 7 | 3 | | | | | 1 | 1 | | 2 |
| Pelvis, fracture | 1 | | | | | 1 | | | | 1 | | | | | | |
| Arm, flesh | 1 | | | | | 1 | 1 | | | | | | | | | |
| Forearm, flesh | | 1 | | | | 1 | | | | | | | | 1 | | |
| Carpus and metacarpus, fracture | | | 1 | | | 1 | | | | | | | | 1 | | |
| Thigh: | | | | | | | | | | | | | | | | |
| Flesh | 4 | | | | | 4 | 1 | 3 | | | | | | | | |
| Fracture, upper third | 1 | | | | | 1 | 1 | | | | | | | | | |
| Fracture, middle third | 1 | | | | | 1 | | | | | | 1 | | | | |
| Leg, fracture | 4 | | | | | 4 | 1 | 2 | | | 1 | | | | | |
| Foot, flesh | | 1 | | | | 1 | | | | | | | | | 1 | |
| Total | 40 | 9 | 5 | 1 | 3 | 58 | 18 | 18 | 1 | 1 | 1 | 1 | 1 | 5 | 7 | 5 |

### (*c*) *Volunteer Army, 1899.*

| Character and location of wound. | How received. | | | | | Nature of missile. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Not in action. | | | | In action. | | | Not in action. | | |
| | In action. | In line of duty. | Not in line of duty. | Suicide. | Total. | Mauser. | Remington. | Bullets, other. | Krag-Jörgensen. | Bullets, other. | Revolver. |
| Head, fracture | 7 | 2 | | 1 | 10 | 4 | 1 | 2 | | 3 | |
| Neck | 8 | 1 | | | 9 | 5 | | 3 | 1 | | |
| Spine, fracture | 1 | | | | 1 | | | 1 | | | |
| Thorax: | | | | | | | | | | | |
| Nonpenetrating | 1 | | | | 1 | 1 | | | | | |
| Penetrating | 20 | 2 | 1 | | 23 | 7 | 7 | 6 | | 3 | |
| Abdomen, penetrating | 21 | 5 | 1 | | 27 | 12 | 3 | 6 | | 3 | 3 |
| Pelvis, fracture | 1 | | | | 1 | | | 1 | | | |
| Perineum, genital, and urinary organs | 3 | | | | 3 | | 2 | 1 | | | |
| Shoulder: | | | | | | | | | | | |
| Flesh | 1 | | | | 1 | | 1 | | | | |
| Joint | 1 | | | | 1 | | 1 | | | | |
| Arm, fracture | 3 | | | | 3 | 2 | | 1 | | | |
| Thigh: | | | | | | | | | | | |
| Flesh | 2 | 1 | | | 3 | 1 | | 1 | | 1 | |
| Fracture, upper third | 2 | | | | 2 | 2 | | | | | |
| Leg: | | | | | | | | | | | |
| Flesh | 1 | | | | 1 | 1 | | | | | |
| Fracture | 1 | | | | 1 | | 1 | | | | |
| Unknown | | 1 | | | 1 | | | | | 1 | |
| Total | 73 | 12 | 2 | 1 | 88 | 35 | 16 | 22 | 1 | 11 | 3 |

## V.—SURGICAL OPERATIONS FOR GUNSHOT WOUNDS.

### *Regulars and volunteers, 1899.*

| Character and location of wound. | Operation. | Result. |  | Nature of missile. |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Recovered. | Died. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. | Shotgun. | Shell. | Canister. | Explosion of cartridge. |
| Head, fracture | Bone removed from brain | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Do | Depressed portion of skull removed | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... |
| Do | Eye enucleated | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Do | Wound closed by sutures | 1 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... |
| Face, flesh | Enucleation of eye | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 |
| Face, fracture | ....do | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Do | Bullet removed through floor of mouth. | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... |
| Do | Fragments of bone and portion of bullet removed. | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Neck | Bullet removed | 2 | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... |
| Spine, fracture | ....do | 1 | 1 | 1 | 1 | .... | .... | .... | .... | .... | .... | .... |
| Do | Laminectomy for extraction of bullet. | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... |
| Thorax, nonpenetrating. | Operation for aneurism of axillary | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Do | Subclavian artery ligated for aneurism. | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... |
| Thorax, penetrating. | Ligation axillary artery | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... |
| Do | Bullet removed | 6 | 1 | .... | 7 | .... | .... | .... | .... | .... | .... | .... |
| Do | Resection seventh rib | .... | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... |
| Abdomen, penetrating. | Bullet removed | .... | 2 | 1 | 1 | .... | .... | .... | .... | .... | .... | .... |
| Do | Bullet located by X-ray in left iliac fossa. | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Do | Laparotomy | 1 | 4 | 4 | 1 | .... | .... | .... | .... | .... | .... | .... |
| Perineum, genital and urinary organs. | Bladder sutured | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... |
| Shoulder, fracture clavicle or scapula. | Fragment of bullet removed | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... |
| Shoulder joint | Bullet removed | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... |
| Arm, flesh | Amputation at shoulder | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Arm, fracture | Amputation | 2 | 1 | 2 | .... | 1 | .... | .... | .... | .... | .... | .... |
| Do | Amputation at shoulder | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Do | Bullet removed | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Do | Bullet and fragments of bone removed. | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Do | Bullet removed and humerus resected. | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... |
| Do | Numerous small fragments removed through incision. | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Elbow joint | Bullet extracted and fragments wired. | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... |
| Forearm, fracture | Amputation | 2 | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... |
| Do | Bullet removed | 2 | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... |
| Do | Pieces of bone removed | 2 | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... |
| Carpus and metacarpus, fracture. | Bullet removed | 2 | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... |
| Do | Amputation of fingers | 3 | .... | 1 | 1 | .... | 1 | .... | .... | .... | .... | .... |
| Do | Amputation, finger and distal two-thirds of third metacarpal. | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... |
| Do | Amputation, finger and resection second metacarpal. | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... |
| Do | Excision third and fourth metacarpal. | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... |
| Do | Amputation at shoulder for gangrene. | .... | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... |
| Do | Operation for necrosed bone | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... |
| Fingers, fracture | Amputation | 54 | .... | 1 | 1 | 18 | 27 | 6 | 1 | .... | .... | .... |
| Hip joint | Pieces of bone removed | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... |
| Thigh, flesh[1] | Bullet discovered by X-ray and removed. | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... |
| Do | Ligation of femoral artery | 1 | 1 | 1 | 1 | .... | .... | .... | .... | .... | .... | .... |
| Do | Amputation of leg[2] | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... |
| Do | Amputation thigh for gangrene | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Thigh, fracture, upper third. | Bullet removed | 3 | .... | .... | 3 | .... | .... | .... | .... | .... | .... | .... |
| Thigh, fracture, middle third. | ....do | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... |
| Do | Amputation | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... |
| Do | Resection | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 1 | .... |
| Do | Fractured ends denuded of necrotic material and coapted; pus sinuses curetted. | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... |

[1] Ligation of the external iliac artery was performed in 1900 in the case of a flesh wound of the thigh received in 1899; gangrene subsequently necessitated a disarticulation at the hip joint, which was successful. See page 827.

[2] For gangrene resulting from injury to popliteal artery.

V.—SURGICAL OPERATIONS FOR GUNSHOT WOUNDS—Continued.

*Regulars and volunteers, 1899*—Continued.

| Character and location of wound. | Operation. | Result. |  | Nature of missile. |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Recovered. | Died. | Mauser. | Remington. | Krag-Jörgensen. | Bullets, other. | Revolver. | Shotgun. | Shell. | Canister. | Explosion of cartridge. |
| Thigh, fracture, lower third. | Bullet removed | 1 |  | 1 |  |  |  |  |  |  |  |  |
| Do | Sinuses curetted and dead bone removed.[1] |  |  | 1 |  |  |  |  |  |  |  |  |
| Knee joint | Bullet removed | 4 |  | 1 | 2 |  | 1 |  |  |  |  |  |
| Do | Amputation of thigh | 1 |  |  |  |  | 1 |  |  |  |  |  |
| Leg, flesh | Resection of external popliteal nerve | 1 |  | 1 |  |  |  |  |  |  |  |  |
| Do | Bullet discovered by X-ray and removed. | 1 |  |  | 1 |  |  |  |  |  |  |  |
| Do | Operation for severed tibial artery |  | 1 | 1 |  |  |  |  |  |  |  |  |
| Leg, fracture | Bullet removed | 1 |  |  |  |  |  | 1 |  |  |  |  |
| Do | Scales of lead removed | 1 |  | 1 |  |  |  |  |  |  |  |  |
| Do | Bullet and spiculæ of bone removed | 1 |  |  |  | 1 |  |  |  |  |  |  |
| Do | Trephining of bone; removal of bullet and necrosed parts. | 1 |  |  |  |  | 1 |  |  |  |  |  |
| Do | Splinters of bone removed | 1 |  | 1 |  |  |  |  |  |  |  |  |
| Do | Operation for comminuted fracture tibia. Ends of tibia freshened and periosteum of opposing segments sutured. | 1 |  |  |  | 1 |  |  |  |  |  |  |
| Do | Removal of detached bone fragments; plaster of paris splint with drainage through posterior exit. | 1 |  | 1 |  |  |  |  |  |  |  |  |
| Do | Amputation | 4 |  |  | 2 | 1 | 1 |  |  |  |  |  |
| Ankle joint | Bullet removed | 1 |  |  |  |  | 1 |  |  |  |  |  |
| Foot, flesh | Carious bone curetted[2] |  |  |  |  | 1 |  |  |  |  |  |  |
| Do | Operation for necrosis | 1 |  |  |  | 1 |  |  |  |  |  |  |
| Tarsus and metatarsus, fracture. | Amputation | 2 |  |  |  | 1 | 1 |  |  |  |  |  |
| Do | Bullet and fragment of bone removed. | 1 |  |  |  |  | 1 |  |  |  |  |  |
| Do | Bullet discovered by X-ray and removed. | 1 |  | 1 |  |  |  |  |  |  |  |  |
| Do | Splinters of bone removed | 1 |  |  |  | 1 |  |  |  |  |  |  |
| Do | Numerous fragments of bone removed[1] |  |  |  |  | 1 |  |  |  |  |  |  |
| Do | Necrosed spiculæ of bone removed | 1 |  |  |  | 1 |  |  |  |  |  |  |
| Toes, fracture | Amputation | 4 |  | 1 |  |  | 3 |  |  |  |  |  |

[1] Remaining August 31, 1900.

[2] Remaining July 31, 1900.

*General remarks on the gunshot wounds of 1898 and 1899.*—Of the 4,919 men injured by gunshot during the years 1898 and 1899, 586 were killed and 4,333 were wounded and received into the field and other hospitals. The killed constituted 11.9 per cent of those struck, the wounded 88.1 per cent. In other words, 1 man was killed for every 7.4 wounded. The Mauser bullet must therefore be regarded as less deadly than the larger missile used during the civil war. The Medical and Surgical History of the Civil War shows the following casualties:

|  | Killed. | Wounded. |
|---|---|---|
| United States troops | 59,860 | 280,040 |
| Confederate troops | 51,425 | 227,871 |
| Total | 111,285 | 507,911 |

In percentages the casualties were: Killed, 17.97; wounded, 82.03; or 1 man killed to every 4.56 wounded. The relative proportion of killed was therefore consideraly larger during the civil war than during our recent experiences. It is to be noted, also, that many of the wounds of the past two years were made by missiles of large caliber. Of those reported in 1899, 471 were specially stated as having been caused by the Remington bullet of caliber .45. It is safe to say that had the whole number of wounds received been inflicted by the smaller Mauser or Krag-Jörgensen bullet the percentage of immediately fatal wounds would have been materially lessened.

The less deadly character of the injuries inflicted by the modern bullet is manifested, also, when we exclude the killed and regard only those wounds which came under the care of the surgeons. Of these, during the two years, there were 4,333, and 259 of the patients, or 6 per cent of the whole number, died. The corresponding percentage from the records of the civil war was 14.3. Table C in Part I of the medical volume of the Medical and Surgical History of the War of the Rebellion shows that among the white troops of the Army there were borne on the reports of sick and wounded 230,018 gunshot wounds, of which 32,907, or 14.3 per cent, proved fatal. The marked reduction of the ratio of killed to wounded may be placed to the credit of the small-caliber bullet; but the lessened mortality among the cases which came into hospital may not wholly be attributed to the humane character of the wounds inflicted by this missile. Due credit must be given to the improved surgical methods of the present day. Wounds of any region of the body may be taken in comparison and the result will always be found to show a decided lessening in the percentage of cases ending fatally among those of the past two years as compared with those of the civil war. Take, for instance, gunshot wounds of the femur. During the civil war surgeons in the field hospitals regarded a fractured femur as a serious menace to life, the danger from which was believed to be materially lessened by an immediate amputation. The field hospital surgical work after a battle consisted in great part of amputations, excisions, and resections. Of 6,576 fractures of the femur 2,923 cases were treated by primary amputation, 186 by resection, and the remaining 3,467 by conservative or expectant measures, this conservative action being due in many of the cases to a want of favorable conditions for the performance of primary operations. The limb was promptly amputated in 44.4 per cent of these gunshot fractures. On the other hand, during the past two years, 82 cases of gunshot fracture of the femur were reported, 6 of which were treated by primary amputation and 2 by resection, the remaining 74 cases being treated by conservative methods, not because the conditions were not favorable for the performance of primary operations, but because of a conviction that under present methods of treatment the limb could be preserved without adding materially to the danger to life. The limb was lost through surgical intervention in only 7.3 per cent of the cases.

Not only limbs but lives were saved by the surgical practice of the past two years. In the 82 gunshot fractures of the femur the upper third was involved in 32, of which 5 were fatal; the middle third in 27, of which 3 were fatal, and the lower third in 23, of which 1 was fatal. The mortality varied from 4.3 per cent of the cases in which the lower third was fractured to 15.6 per cent of the cases in which the upper third was the site of the injury, whereas the corresponding percentages of fatal cases during the civil war were, respectively, 42.8 and 49.7. The whole of the lessened mortality in these serious fractures may be credited to the protection given to the wound by the first-aid dressing and to the care exercised in the subsequent aseptic treatment of the fractured limb.

In penetrating wounds of the thorax the rate of mortality fell from 62.6 per cent during the civil war to 27.8 per cent during the years 1898 and 1899. The civil-war reports show 8,403 cases in which the results were determined; 5,260 deaths occurred among the number. The reports for the later years, as already stated, show 198 cases, of which only 55 were fatal.

There were during the civil war 3,475 penetrating wounds of the abdomen in which the ultimate results were determined; 3,031 of these, or 87.2 per cent of the total, proved fatal. During the years 1898 and 1899 116 cases—81 fatal—were recorded, the fatal cases constituting 70 per cent of the total. Of 10 cases in which laparotomy was performed, 9 were fatal.

The alteration in the percentages of mortality in fractures of the cranium is less marked than in wounds of other parts of the body. Of 4,243 cases of cranial fracture during the civil war 2,514, or 59.2 per cent, were fatal. In 1898 and 1899 68 cases were recorded, with 37 deaths, the latter forming 54.4 per cent of the whole number.

## SUICIDES AND HOMICIDES.

The following tabulations present the details of the cases of suicide and homicide which were reported during the years 1898 and 1899. The ratios of suicides per thousand of strength—0.26 in the former and 0.28 in the latter year—and that of homicides—0.13 and 0.22, respectively—are all lower than the mean annual ratios of the ten years 1888–1897:

### 1898.

| Commands. | Mean strength. | Suicides. | | | | | | | | | Homicides. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Poison, narcotic. | Poison, irritant. | Hanging. | Drowning. | Incised wound. | Gunshot. | Suffocation. | Total. | Ratio per thousand of strength. | Incised wound. | Gunshot. | Total. | Ratio per thousand of strength. |
| **Cuba:** | | | | | | | | | | | | | | |
| Regulars | 3,810 | .... | .... | .... | 2 | .... | 1 | .... | 3 | 0.79 | .... | .... | .... | ...... |
| Volunteers | 4,535 | .... | .... | .... | .... | .... | 1 | .... | 1 | .22 | .... | .... | .... | ...... |
| **Total** | 8,345 | .... | .... | .... | 2 | .... | 2 | .... | 4 | .48 | .... | .... | .... | ...... |
| **Porto Rico:** | | | | | | | | | | | | | | |
| Regulars | 1,930 | .... | .... | .... | .... | .... | 1 | .... | 1 | .52 | .... | .... | .... | ...... |
| Volunteers | 3,763 | .... | 1 | .... | .... | .... | .... | .... | 1 | .27 | .... | 1 | 1 | 0.27 |
| **Total** | 5,693 | .... | 1 | .... | .... | .... | 1 | .... | 2 | .35 | .... | 1 | 1 | .18 |
| **Pacific Islands:** | | | | | | | | | | | | | | |
| Regulars | 2,903 | 1 | .... | .... | .... | .... | .... | .... | 1 | .34 | .... | 1 | 1 | .84 |
| Volunteers | 7,004 | .... | 1 | .... | .... | 1 | .... | .... | 2 | .29 | .... | 1 | 1 | .14 |
| **Total** | 9,907 | 1 | 1 | .... | .... | 1 | .... | .... | 3 | .30 | .... | 2 | 2 | .20 |
| **United States:** | | | | | | | | | | | | | | |
| Regulars | 37,992 | 2 | .... | 2 | 1 | 1 | 11 | 1 | 18 | .47 | .... | 4 | 4 | .11 |
| Volunteers | 85,269 | .... | 1 | .... | .... | 2 | 8 | .... | 11 | .13 | 1 | 11 | 12 | .14 |
| **Total** | 123,261 | 2 | 1 | 2 | 1 | 3 | 19 | 1 | 29 | .24 | 1 | 15 | 16 | .13 |
| **United States armies:** | | | | | | | | | | | | | | |
| Regulars | 46,635 | 3 | .... | 2 | 3 | 1 | 13 | 1 | 23 | .49 | .... | 5 | 5 | .11 |
| Volunteers | 101,160 | .... | 3 | .... | .... | 3 | 9 | .... | 15 | .15 | 1 | 13 | 14 | .14 |
| **Total** | 147,795 | 3 | 3 | 2 | 3 | 4 | 22 | 1 | 38 | .26 | 1 | 18 | 19 | .13 |

## 1899.

| Commands. | Mean strength. | Suicides. | | | | | | | | Homicides. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Poison, narcotic. | Poison, irritant. | Drowning. | Incised wounds. | Gunshot. | Other injuries. | Total. | Ratio per thousand of strength. | Incised wounds. | Gunshot. | Other injuries. | Total. | Ratio per thousand of strength. |
| **Cuba:** | | | | | | | | | | | | | | |
| Regulars | 11,969 | 1 | 1 | .... | 2 | 3 | .... | 7 | 0.58 | .... | 3 | 1 | 4 | 0.33 |
| Volunteers | 8,082 | .... | .... | .... | .... | .... | .... | .... | ...... | .... | .... | .... | .... | ...... |
| Total | 20,051 | 1 | 1 | .... | 2 | 3 | .... | 7 | .35 | .... | 3 | 1 | 4 | .20 |
| Porto Rico: | | | | | | | | | | | | | | |
| Regulars | 3,347 | .... | .... | .... | .... | 1 | 1 | 2 | .60 | 1 | .... | .... | 1 | .30 |
| Volunteers | 380 | .... | .... | .... | .... | .... | .... | .... | ...... | .... | .... | .... | .... | ...... |
| Total | 3,727 | .... | .... | .... | .... | 1 | 1 | 2 | .54 | 1 | .... | .... | 1 | .27 |
| **Pacific Islands:** | | | | | | | | | | | | | | |
| Regulars | 22,922 | 1 | .... | 1 | 2 | 5 | 1 | 10 | .44 | 2 | 7 | 1 | 10 | .44 |
| Volunteers | 16,358 | .... | .... | .... | .... | 5 | .... | 5 | .31 | 1 | .... | 1 | 2 | .12 |
| Total | 39,280 | 1 | .... | 1 | 2 | 10 | 1 | 15 | .38 | 3 | 7 | 2 | 12 | .31 |
| United States: | | | | | | | | | | | | | | |
| Regulars | 26,208 | 1 | .... | 1 | .... | 2 | .... | 4 | .15 | .... | 5 | .... | 5 | .19 |
| Volunteers | 15,984 | .... | 1 | .... | .... | 1 | .... | 2 | .13 | .... | 1 | .... | 1 | .06 |
| Total | 42,192 | 1 | 1 | 1 | .... | 3 | .... | 6 | .14 | .... | 6 | .... | 6 | .14 |
| United States armies: | | | | | | | | | | | | | | |
| Regulars | 64,446 | 3 | 1 | 2 | 4 | 11 | 2 | 23 | .36 | 3 | 15 | 2 | 20 | .31 |
| Volunteers | 41,100 | .... | 1 | .... | .... | 6 | .... | 7 | .17 | 1 | 1 | 1 | 3 | .07 |
| Total | 105,546 | 3 | 2 | 2 | 4 | 17 | 2 | 30 | .28 | 4 | 16 | 3 | 23 | .22 |

### *Decade 1888–1897 compared with 1898 and 1899.*

| Year. | Mean strength. | Suicides. | | Homicides. | |
|---|---|---|---|---|---|
| | | Number. | Ratio per thousand. | Number. | Ratio per thousand. |
| 1888 | 26,739 | 8 | 0.30 | 5 | 0.19 |
| 1889 | 27,206 | 21 | .77 | 5 | .18 |
| 1890 | 26,684 | 16 | .60 | 7 | .26 |
| 1891 | 26,460 | 22 | .83 | 8 | .30 |
| 1892 | 26,861 | 22 | .82 | 5 | .19 |
| 1893 | 27,659 | 22 | .80 | 5 | .18 |
| 1894 | 27,674 | 18 | .65 | 10 | .36 |
| 1895 | 27,326 | 19 | .70 | 1 | .04 |
| 1896 | 27,183 | 12 | .44 | 4 | .15 |
| 1897 | 27,374 | 10 | .37 | 5 | .18 |
| Mean | 27,116.6 | 17 | .63 | 5.5 | .20 |
| 1898 | 147,795 | 38 | .26 | 19 | .13 |
| 1899 | 105,546 | 30 | .28 | 3 | .22 |

## SPECIAL SURGICAL REPORTS.

The following list comprises the reports on surgical subjects rendered during the fiscal year ended June 30, 1900:

| Name. | Rank. | Reports. |
|---|---|---|
| Ames, E. W | Acting assistant surgeon | History of radiographs. Report of work as pathologist in U. S. A. general hospital, Presidio, San Francisco, Cal. |
| Anderson, C. T. G | do | Gunshot wound, left leg. |
| Arthur, Wm. H | Major and surgeon | Report of surgical operations on hospital ship Missouri. |
| Baird, W. T | Acting assistant surgeon | Hernia. Chronic ulcer of penis. |
| Banister, J. M | Major and surgeon | Operation for radical cure of hernia; 4 cases. |
| Bevans, James L | Acting assistant surgeon | Incised wound of throat; suicide. |
| Borden, W. C | Captain and assistant surgeon. | Gunshot wounds observed during Spanish-American war. |
| Boyer, Arthur I | Acting assistant surgeon | Fracture of head of femur. |
| Bradley, A. E | Captain and assistant surgeon. | Appendicitis, 2 cases. Operation for radical cure of hernia. |
| Bratton, T. S | do | Incised wounds, arm, neck, and back. |
| Carling, John | Acting assistant surgeon | Report of an engagement at Iba, P. I. |
| Cloud, M. M | First lieutenant and assistant surgeon. | Foreign body in intestines; safety pin. Gunshot wound of chest. |
| Duval, Douglas F | do | Amputation of legs. Operation for radical cure of hernia. |
| Ebert, R. G | Major and surgeon | Operation for radical cure of hernia. |
| Fitzgerald, R. J | Major and surgeon, volunteers. | Report of cases occurring in First Reserve hospital, Manila, P. I. |
| Flagg, C. E. B | Captain and assistant surgeon. | Report of surgical operations year ending June 30, 1900. |
| Ford, J. H | First lieutenant and assistant surgeon. | Surgical operations Second Reserve hospital, Manila, P. I.: (1) Appendicitis; (2) nephrolithiasis. |
| Girard, A. C | Major and surgeon | Gunshot wound of brain, 2 cases. Operation for radical cure of hernia, 19 cases. Report of surgical operations, 59 cases. Report of surgical operations, February, 1900. |
| Godfrey, Guy C. M | Captain and assistant surgeon. | Method of controlling arterial hemorrhages. Report of surgical operations, December, 1899. Multiple abscess. Report of surgical operations, January, 1900. Surgical operations, February, 1900. Surgical operations, March, 1900. Surgical operations, April, 1900. |
| Haines, A. C | Captain and assistant surgeon, volunteers. | Report of surgical operations at Davao, P. I. |
| Harvey, P. F | Major and surgeon | Gunshot wound of chest. |
| Howard, D. C | Captain and assistant surgeon. | Tubercular arthritis, resection. |
| Jackson, T. W | Acting assistant surgeon | Traumatic meningitis, epilepsy. Incised wounds of neck. |
| Kennedy, James S | do | Gunshot wound of chest. Fracture of skull, trephining. |
| Kilbourne, H. S | Major and surgeon | Dislocation of left hip. |
| Matthews, W. S. H | Major and surgeon, volunteers. | Gunshot wound of back. |
| Maus, L. M | Major and surgeon | Operation for radical cure of hernia. |
| McMillen, M. B | Acting assistant surgeon | Gunshot wound of head. |
| Moseley, E. B | Major and surgeon | Gunshot fracture, left leg. |
| Penrose, George | Major and surgeon, volunteers. | Gunshot wound of head. |
| Pillow, Robert | Acting assistant surgeon | Appendicitis. |
| Rebert, M. A | do | Tumor, right breast, sarcoma. |
| Shellenberger, J. E | Major and surgeon, volunteers. | Multiple wounds. |
| Shimer, Ira A | First lieutenant and assistant surgeon. | Operation for radical cure of hernia, 3 cases. Traumatic epilepsy. |
| Skinner, George A | do | Appendicitis. Osteomyelitis. |
| Stark, A. N | Captain and assistant surgeon. | Surgical operations since January, 1900. Report of surgical operations: (1) Acute grangrenous appendicitis; (2) operation for disease of mastoid; (3) fracture of patella; (4) hypodermatic administration of quinine in the malaria of the Tropics. |
| Stone, J. H | First lieutenant and assistant surgeon. | Cœliotomy, with appendectomy and unilateral ovariotomy. |
| Welch, D. W | do | Gunshot wound of ankle. |
| Wertenbaker, C. I | Acting assistant surgeon | Gunshot wound of head. Gunshot wound of face. Gunshot wound of chest. |
| Willcox, Charles | Captain and assistant surgeon. | Abdominal abscess. Operation for radical cure of hernia. Report of three surgical operations: (1) Radical cure, encysted hydrocele cord, and varicocele. (2) removal of toes to correct deformity; (3) ligation of transverse facial artery. |
| Wilson, N. W | Acting assistant surgeon | Gunshot wound of head; suicide. |
| Woodruff, C. E. | Captain and assistant surgeon. | Gunshot wounds, Krag-Jörgensen rifle, 2 cases. |

Notwithstanding the utmost care exercised in operative surgery in the field, aseptic results, as might be expected, are not always obtained. To illustrate this, Capt. Charles E. B. Flagg, assistant surgeon, United States Army, reported the cases of two men of the Seventeenth Infantry wounded at Masapinit November 10, 1899. One was brought into the regimental hospital with a gunshot wound of the right thorax and abdomen. An incision as for right lumbar nephrectomy was made, and the liver and intestines were explored and found to be uninjured. Drainage was instituted, as the wound passed through the diaphragm and lung. The other was received immediately afterwards, with a first-aid dressing on his wounds. The aperture of entrance was just above the crest of the left ilium, the bullet (Mauser) passing upward and to the right, fracturing the spinous processes of the two upper lumbar vertebræ, but inflicting no injury on the spinal cord, as shown by absence of symptoms and by an exploratory incision. The bullet was taken from the lumbar muscles on the right. Both cases received their first dressing on arriving at Angeles on November 13. The first case was retained at this place and speedily recovered. The second was sent to the First Reserve hospital at Manila, where death occurred from septic fever November 22. The history of the latter case does not show when the infection took place; but in both cases the operative treatment at the regimental hospital was conducted with the same precautionary measures. No one but the operator and his assistant came in contact directly or indirectly with the wounds, and all instruments and dressings were carefully sterilized.

As illustrations of the military surgery of the medical department of the army in the Philippines, I here submit a report of the surgical work in the First Reserve hospital, Manila, P. I., together with reports of gunshot and bolo wounds, taken chiefly from the records of the hospital ship *Relief*.

## REPORT OF THE OPERATIVE WORK AT THE FIRST RESERVE HOSPITAL, MANILA, P. I., FROM SEPTEMBER 1, 1899, TO FEBRUARY 28, 1900, BY MAJ. W. P. KENDALL, SURGEON, UNITED STATES ARMY, CHIEF OPERATOR.

Because of the large amount of work and limited assistance, this report is not complete, though it includes all important operations, with details of the most interesting. No attempt has been made to give a complete history of the cases during treatment, the final result alone being noted. With from 150 to 200 beds always filled and rapidly changing, the work alone was more than could be perfectly cared for, and histories dropped into the background.

During the first five months, and before base hospitals had been established at various points in the island, most of the larger surgical work was sent back from the line to the First Reserve hospital, which fact accounts for the large amount of work done. This was also true of the period antedating the beginning of this report, and with which it is in no way connected.

The work of Acting Asst. Surg. Ernest Robinson, United States Army, my assistant and colaborer, has merited the highest praise. His unerring judgment, great experience, and splendid technique were constant causes for remark and admiration. To him much is due for the, it is believed, excellent quality of work done during this period.

*Hernia.*—During the period mentioned there were performed 49 operations for the radical cure of hernia. These included 2 umbilical, 2 ventral, in old cicatrices following operations for appendicitis, and 1 femoral; the rest were inguinal of different types. The Bassini was the method generally adopted, while kangaroo tendon for the deepest layers, catgut for the second, and interrupted silkworm gut for the integument were the materials usually employed for suturing. These were sometimes interrupted, sometimes continuous. Castration was resorted to in two or three cases of undescended testicle. At first some little trouble was experienced with the suture material. This entirely disappeared when all suture material was resterilized, and afterwards primary union was the invariable rule.

Because of the numerous complaints heard after the operation, the question of the advisability of performing it has arisen; but it is believed that those who complained would have complained more without it and that their troubles were mostly imaginary, while really good men were infinitely benefited by it. It is believed, however, that no man should be enlisted with a hernia, however small, and the scar of an appendicitis operation should positively bar a man from enlistment. This applies even where there has been primary union. Most of the cases were returned to duty from four to six weeks after the operation, without a truss. One case of recurrence was observed.

*Appendicitis.*—There were operated upon for appendicitis 19 cases, by far the greater number having reached the abscess stage. That no uncomplicated case was lost was considered great good fortune. The appendix was removed in nearly every case, though there were a few exceptions, and in 2 of these there was a recurrence of the disease before the cases got from under observation. At the second operation the appendices were removed.

One case of chronic amœbic dysentery presented such a thickened condition in the right iliac region that an operation for appendicitis was performed, the real nature of the case not being discovered until the abdomen was opened. Such thickening of the intestinal coats I had never seen; these were friable to an extreme degree. To the casual reader this error may seem to have been unnecessary, but this case was one of the latest in a series where no error in diagnosis had been made, and no case was ever operated upon without consultation. It is reported in order to show what possibilities may arise. The case had been under observation for two months, and though a dysenteric condition was known to exist, the extent of it was not believed to be so great, and appendicitis was thought to have supervened. The tumor consisted of plastic material about the caput coli, the walls of which were enormously thickened and disorganized.

*Perforation in typhoid.*—One attempt to sew the perforations caused by a typhoid ulcer was made, a general anæsthetic being used; but though the intestinal wounds, two in number, looked well at post-mortem, the result was a failure. The patient lived thirty-six hours after the operation, and it was believed that had it been done some hours earlier the result might have been different.

*Abscess of the liver.*—There were three abscesses of the liver seen and operated upon. All gave a dysenteric history, and all were failures. To one unfamiliar with the extent to which the lesions of chronic amœbic dysentery go, this seems unnecessary, but to one who is familiar with the lesions the wonder is that any recover from intercurrent trouble. One case lived ten days, and then died of exhaustion. They were operated upon while under the influence of a general anæsthetic, the capsule and peritoneum having been united the day previous. A thermo cautery was used to open the abscess, and no hemorrhage of any moment was met with. One case was multiple, the others single.

As has been said, the pathological appearances presented by the colon at post-mortem precluded recovery from the dysentery alone.

*Disarticulation at the hip, following ligation of the external iliac, traumatic aneurism.*—W. C. R., first lieutenant, Thirty-sixth Infantry, United States Volunteers, was admitted December 30, 1899, suffering from a gunshot wound, Mauser, in the right Scarpa's triangle. The ball entered about 3 inches below Poupart's ligament and passed directly backward, appearing just below the gluteal fold; no fracture. The wound was received in action near Tarlac December 21, 1899.

At the time of admission the external wounds were still discharging slightly, and a pulsating tumor at the base of the triangle extended above Poupart's ligament. It was decided that the ligation of the main artery offered the only chance to save life, and accordingly, on January 3, 1900, the patient was anæsthetized and an incision 3 inches long was made just above Poupart's ligament and parallel with it. Separating the peritoneum from the pelvic wall the external iliac was easily reached, and a ligature of heavy silk thrown around it about 1½ inches above the ligament. The patient rallied well from ether, but the circulation was not reestablished, and four days later, a line of demarkation showing, it became necessary to amputate. Disarticulation at the hip joint was done by Wyeth's bloodless method; an unhealthly short anterior flap and a better and long posterior one was secured. The patient was greatly shocked, and venous injection of 3 pints of normal salt solution was resorted to besides strychnia and brandy hypodermatically. After hours of extreme collapse the patient slowly rallied, and but for a slight mental aberration, which appeared some two weeks later and continued for a week, made an uneventful recovery. The anterior flap, notwithstanding its badly infiltrated and discolored condition, did not break down, and the final result, the conditions considered, was perfect.

*Gunshot wounds.*—The experience with gunshot wounds confirms that of others, viz: That they are generally aseptic and show infection only when exposed after the receipt of the injury. Those which were flesh only, when carefully dressed, healed rapidly and without suppuration. The majority of wounds suppurated, but this was undoubtedly due to contamination upon the field, as frequently proven by the healing without suppuration in the carefully dressed cases. The use of the first-aid package carried by individuals proved of inestimable value.

Wounds complicated by bone and even joint injuries followed the above rule, and when kept pure healed with surprising rapidity and often with slight or no permanent injury, though destruction of tissue in some cases was considerable; in one or two instances the ball passed through the kneejoint, yet left no lasting disability or loss of motion.

As to the effect upon tissue which the small-sized modern rifle ball produces, it is not thought that the experience modifies accepted opinions, but rather confirms them. The openings of entrance and exit did not differ so much in appearance as one would expect, the rule being that the difference was apparent, though cases were not wanting in which it was impossible to tell in which direction the ball had traveled. In the majority of cases foreign material from the clothing was not carried by the missile into the tissues.

Time was wanting, though other opportunities offered, to make a careful study of the explosive effects of the small-caliber ball at different ranges. As a rule, however, wounds were received at comparatively short range and the explosive effect was present.

The 3 following cases owe their interest to the fact that they became infected with the bacillus aerogenes capsulatus prior to admission to the hospital, and they were the only cases so infected between the dates of September 1, 1899, and March 1, 1900.

In all 3 cases the exact condition was not detected upon admission, but rapid changes, both constitutional and local, soon made it apparent that we were not dealing with ordinary infection.

CASE I.—A captain of the Thirty-sixth Infantry, United States Volunteers, was admitted to hospital about 7 o'clock in the evening with a flesh gunshot wound of the right leg in its middle portion. No fracture existed; the wound had been antiseptically dressed, it was supposed, in the field. The patient was suffering considerable pain, which was thought to be due alone to the extravasation in the muscles of the calf, the parts being considerably swollen, tense, and ecchymotic. An evaporating lotion was prescribed, and the patient was left for the night. He received one-half grain of morphine during the night. I was called early in the morning to see him because of the pain he was suffering. To my surprise the swelling which the night before did not extend above the lower border of the popliteal space had now reached Poupart's ligament, was fairly tense, ecchymotic, and crepitation existed everywhere beneath the integument, which, particularly from the lower third of the thigh downward, was covered with blebs containing a sero sanguinolent fluid, while bubbles appeared in the wound and a cadaveric odor was noticed. The pain was severe and the patient already in profound shock.

He was immediately taken to the operating room, where a consultation decided that a high amputation offered the only hope of saving life, and although the case was considered hopeless, an amputation at the middle of the thigh was done, but notwithstanding all possible stimulation the patient sank rapidly and died soon after leaving the table. The microscope revealed the presence of the bacillus aerogenes capsulatus.

CASE II.—Private R. R., Company A, Thirty-seventh Infantry, United States Volunteers, was admitted January 24, 1900, suffering with a flesh gunshot wound of the lower third of the right thigh. No fracture; the wound had been dressed on the field three days before, and though it looked badly the condition was not diagnosed. After a thorough cleaning under ether a large rubber drainage tube was introduced, and the wound having been put up in a wet dressing, the patient was returned to the ward.

Next day he was profoundly shocked; the entire limb was badly swollen and ecchymotic; crepitation beneath the integument and exuding gas from the wound existed, together with the peculiar cadaveric odor. As extreme surgical interference was out of the question, several long incisions, laying open all the deep layers of fasciæ, were made over both thigh and leg; the patient was immediately placed in a continuous bath of the temperature of 104°, and all possible stimulation kept up, but he sank rapidly and died four hours later. Bacteriological examination revealed the presence of the bacillus aerogenes capsulatus.

CASE III.—A. O'N., private, Company F, Thirty-ninth Infantry, United States Volunteers, was admitted on the same date as the previous case, January 24, 1900, having received at the same time, January 21, and place a flesh gunshot wound of the right buttock. Like the other, it was not considered dangerous, there being no fracture of any of the bones or injury to the vessels. The wound was cleansed, dressed antiseptically, and the patient returned to the ward. Next day nothing serious was suspected; a drainage tube having been introduced and the wound dressed, he was returned to bed. At this dressing a scarlatinous rash over the entire body was apparent. This had practically disappeared twenty-four hours later, but the conditions had now become suspicious. In a milder degree all conditions mentioned in the previous cases were apparent, and the feeble and rapid pulse indicated that we were dealing with our old enemy. The patient died some ten hours later. Microscopical examination confirmed the diagnosis, bacillus aerogenes capsulatus being present.

An extreme degree of shock, with all its accompanying symptoms, was a marked feature in all these cases.

Private F. T., regiment not given, was shot near Calamba, P. I., in action with the Filipino insurgents, the ball entering about one inch below the center of the left clavicle; no exit; no fracture of ribs. The immediate effect was shown by considerable shock and profuse hemorrhage, which was controlled by pressure. He reached the hospital about thirty-six hours after the receipt of the injury, anæmic from the hemorrhage and very weak, pressure still kept up. Upon removing the dressing the hemorrhage did not continue and the wound was dressed antiseptically. The patient steadily improved, no further hemorrhage occurred, and the wound healed. Some two weeks later a pulsating tumor about the size of a hen's egg was discovered in the outer portion of the subclavicular space.

As this was growing rapidly and already causing considerable pain in the arm, it was decided to tie the subclavian artery. The usual incision was made about three-fourths of an inch above the clavicle and parallel with it. Considerable difficulty was experienced in locating the artery, due to the absence of the normal conditions which the extravasation of blood into the neighboring tissues and subsequent inflammation had produced, and when found it was discovered that to get well above the tumor it was necessary to throw the ligature inside of the outer border of the scalenus anticus muscle, thus really tying in the second part of the artery.

No further trouble was experienced; the wound healed by first intention, and three weeks later the patient was sent to the United States. The temperature of the arm was restored in about forty-eight hours; sensation had been restored as far as the wrist when he left the hospital, but as yet the loss of the power of motion was complete.

The kneejoint was opened three times for recent fracture of the patella, the fragments wired, and primary union obtained with perfect motion in each case.

One case of tetanus occurred in the person of a native, with fatal result.

Erysipelas was not seen.

One cystic ovarian tumor, weight 40 pounds, was successfully removed.

The small number of venereal cases is accounted for by the fact that this was a distinct department and those operations were done at another point.

*Anæsthetics.*—Regarding the choice of anæsthetics there was an apparent difference, not seen in the United States, between ether and chloroform. Whether this would disappear after a longer experience and some modified way of administration or not was not determined; but, as it was, we all grew to be afraid of chloroform, including those whose experience with it had been large, even to the exclusion almost of ether. Heart failures came on rapidly and with great severity, producing death in two chronic appendicitis cases before the operation was begun. Besides these there were several cases of suspended animation, while with ether no trouble was observed.

Our experience fully confirms that of those who claim that in hot countries the paralyzing effect of chloroform is greater than when used in colder climates, due, probably, to the lack of tone of the motor nerves.

In the following table the various operations are classified and the results in each shown:

| Operations. | Total. | Recovered. | Died. | Operations. | Total. | Recovered. | Died. |
|---|---|---|---|---|---|---|---|
| Abscesses, large | 52 | 51 | 1 | Dislocations | 2 | 2 | .... |
| Abscess of liver | 3 | ..... | 3 | Enucleation of the eye | 3 | 3 | .... |
| Amputations | 15 | 13 | 2 | Exostosis—1 humerus, 1 femur | 2 | 2 | .... |
| Amputation, hip joint for gunshot wound | 2 | 1 | 1 | Fistula in ano | 12 | 12 | .... |
|  |  |  |  | Fractures, simple | 19 | 19 | .... |
| Amputation of humerus | 1 | 1 | .... | Gunshot wounds: |  |  |  |
| Amputation of thigh | 4 | 3 | 1 | Flesh | 142 | 139 | 3 |
| Appendicitis | 19 | 17 | 2 | With fractures | 32 | 27 | 5 |
| Carbuncle | 3 | 1 | 2 | Hemorrhoids | 35 | 35 | .... |
| Castration | 2 | 2 | .... | Hernia, all varieties | 49 | 49 | .... |

| Operations. | Total. | Recovered. | Died. |
|---|---|---|---|
| Hydrocele | 7 | 7 | .... |
| Incised wounds, flesh | 16 | 15 | 1 |
| Ingrowing toe nail | 6 | 6 | .... |
| Intracapsular fractures | 2 | 2 | .... |
| Ischio-rectal abscess | 7 | 7 | .... |
| Lacerated wounds | 22 | 22 | .... |
| Ligations: | | | |
| External iliac, recovery after amputation at hip joint | 1 | 1 | .... |
| Femoral artery | 1 | 1 | .... |
| Subclavian artery, second part | 1 | 1 | .... |
| Temporal artery | 1 | 1 | .... |
| Ovariotomy | 1 | 1 | .... |
| Salivary fistula | 1 | 1 | .... |
| Simple fracture, patella, wired, recovery with perfect motion | 3 | 3 | .... |
| Sprains | 6 | 6 | .... |
| Tenotomy for strabismus | 5 | 5 | .... |
| Tetanus | 1 | .... | 1 |
| Trephining, gunshot wound | 1 | .... | 1 |
| Urethrotomy: | | | |
| External | 1 | 1 | .... |
| Internal | 4 | 4 | .... |
| Varicocele, Bennet's operation | 13 | 13 | .... |
| Benign tumors | 7 | 7 | .... |
| Empyema, exsection of seventh and eighth ribs | 3 | 2 | 1 |
| Epithelioma, face | 1 | 1 | .... |
| Exsection elbow joint | 1 | 1 | .... |
| Mastoid, Schake Schwartz | 1 | 1 | .... |
| Osteomyelitis | 2 | 2 | .... |

## ABSTRACTS FROM THE RECORDS OF THE U. S. HOSPITAL SHIP RELIEF.

[Operations by Maj. H. O. Perley, surgeon, United States Army.]

*Gunshot wound of face.*—J. L., private, Company K, Forty-third Infantry, United States Volunteers. Transferred to hospital ship *Relief* from hospital, First Battalion, Forty-third Infantry, United States Volunteers, Tacloban, Leyte, P. I., April 30, 1900.

Diagnosis on transfer slip: Gunshot wound right side of face, one-half inch from nose, by small-caliber bullet. Bullet supposed to be lodged in head. Occurred in attack on insurrectos at La Paz, Leyte, P. I., April 26, 1900. Severe. Condition on admittance, good. Temperature, normal. Diagnosis made on *Relief:* Severe gunshot wound of face. Entrance, three-fourths inch below inner cathus, right eye. No exit. Slight purulent discharge; foul odor resembling ozena. X-ray examination showed faintly dark object deeply within tissues of head in plane in front of ears. Inspection and palpation showed slight bulging in front of left ear just below zygomatic process.

Operation May 1, 1900: Curvilinear incision 2 inches long, with concavity forward, made one-half inch in front of left ear. Dissection made down to bone. Bullet felt in left zygomatic fossa; body of bullet resting just below floor of left orbit in antrum of Highmore. Nondeformed Remington bullet extracted through zygomatic fossa and between zygomatic process and sigmoid notch. Nasal process, right superior maxillary bone shattered; floor of left orbit fissured and posterior surface left superior maxillary bone perforated. Track of bullet irrigated; rubber drainage tube inserted through entire track and antiseptic dressings applied.

Operation May 25, 1900: Tenderness along left upper molars, continued inability to masticate and œdema over anterior surface left superior maxillary region led to suspicion of pus in left antrum. Second molar tooth was extracted (and placed in antiseptic solution with view to its being subsequently replaced in jaw). A puncture was made into floor of antrum. No pus was found.

*Gunshot fracture of humerus.*—H. C. L., private, Company H, Forty-third Infantry, United States Volunteers. Transferred to hospital ship *Relief* from post hospital, Kalbayok, Samar, P. I., May 1, 1900.

Diagnosis on transfer slip: Gunshot wound, region left elbow. General condition, fair. Diagnosis made on *Relief:* Two severe gunshot wounds left arm. (1) Entrance, inner side of arm, 2 inches above and one-half inch within external condyle. Exit, posterior surface, median line, 4 inches above tip of olecranon, fracturing humerus. (2) Entrance, one-half inch above and one-half inch within external condyle, antero-external surface. Exit, posterior surface, one-half inch above and one-half inch within wound of entrance. All wounds badly infected. Great general tumefaction. Received in action at Catubig, Samar, P. I., April 16, 1900.

Operation May 1, 1900: Humerus found fractured, obliquely from before, backward, and upward, line of fracture being opposite upper wound at junction of lower and middle thirds. Supercondyloid ridge notched along track, lower wound. Several small fragments of bone removed, and brass-jacketed Remington, greatly deformed, found beneath deep fascia, behind lower wound of exit. Rubber drainage tubes inserted and plaster of paris splint applied.

*Gunshot fracture of humerus.*—F. E., private, Company K, Eighteenth Infantry, United States Army. Transferred to hospital ship *Relief*, from hospital Eighteenth Infantry, Capiz, Panay, P. I., April 19, 1900.

Diagnosis on transfer slip: Partial anchylosis of right elbow, result of gunshot wound with compound comminuted fracture of lower third, humerus. Received in engagement with insurgents February 5, 1900, at Dao, Panay, P. I. Condition on admission: General health, excellent. Diagnosis made on *Relief:* Severe gunshot wound right arm. Wound of entrance on outer surface of right forearm, 4 inches below external condyle; exit posterior surface of arm, 4 inches above olecranon process. Wound of entrance one-half inch in diameter. Wound of exit; large irregular scar, 4 inches long and 1½ inches wide. Both wounds healed. Elbow joint anchylosed (fibrous). Humerus broken, fibrous union, lower fragment tipped inward and forward at angle of 120° with upper fragment. Seat of fracture 2 inches above elbow joint. Wrist and fingers anchylosed (fibrous).

Operation, May 5, 1900: Anchylosis of fingers, wrist, and elbow broken up under anæsthesia. Humerus refractured. Fragments manipulated. Arm reset, right angle splint.

*Gunshot fracture of ulna.*—G. H. O., private, Company C, Forty-third Infantry, United States Volunteers. Transferred to hospital ship *Relief* from First Battalion hospital, Forty-third Infantry, United States Volunteers, Tacloban, Leyte, P. I., April 30, 1900.

Diagnosis on transfer slip: Shot in skirmish with insurrectos, between Tannan and Dagame, Leyte, P. I., March 31, 1900. Entrance wound, anterior internal surface, middle third, right forearm. Exit wound, posterior external surface, same region, causing compound comminuted fracture of ulna, and probably dividing ulnar nerve. By bullet, probably Remington. Severe. General condition on admission, fair. Slight evening temperature. Diagnosis made on *Relief:* Severe gunshot wound of right forearm. Entrance, inner surface of forearm in line with and 4 inches below inner condyle. Wound nearly closed. Slight exuberant granulations. Exit, ulnar side, one-half inch internal and 5 inches below olecranon process, large granulating wound 4 by 1½ inches, discharging pus. Deep cavity in center leading to space from which fragments of ulna have been taken. Wound cleansed and antiseptic dressing applied. X-ray examination showed 3 inches of ulna gone at junction of upper and middle third; also foreign body 4 inches below crease of elbow, and one-half inch internal to the radius.

Operation, May 5, 1900: Two small fragments of shell, ¼ by ⅛ inch each, and 1 inch carious bone from lower fragment of ulna removed. Suppurating cavity irrigated and packed with iodoform gauze.

*Gunshot wound of abdomen.*—P. M., private, Company B, Fourth Cavalry. Transferred to the hospital ship *Relief* from field hospital, Niac, P. I., January 10, 1900.

Diagnosis on transfer slip: Perforating gunshot wound (Mauser). Entrance, 1 inch to right and above symphysis pubis. Exit, 2 inches above and posterior to great trochanter, right femur, ball passing through abdomen and ilium. Received in action near Niac, P. I., January 9, 1900.

Operation, January 11, 1900, 8 p. m.: Incision from navel to symphysis. Localized peritonitis, lower part of abdomen. Perforation one-half inch in diameter, in ileum, sewed up with Lembert suture. Cavity flushed and drainage established. Died 12.20 a. m., January 12, 1900, from shock following peritonitis, result of severe perforating gunshot wound of abdomen.

*Gunshot wound of ischium.*—C. C., sergeant, Company H, Forty-seventh Infantry, United States Volunteers. Transferred to hospital ship *Relief* from regimental hospital, Forty-seventh Infantry, United States Volunteers, Legaspi, P. I., May 2, 1900.

Diagnosis on transfer slip: Severe perforating wound of body. Wound of entrance 4 inches above Poupart's ligament. Wound of exit posterior aspect, junction of middle and upper third, left thigh. Slight nonpenetrating wound, front of right thorax, contused, 4 inches long and 2 inches to left of sternum. Wounded near Ligas, April 11, 1900. Both wounds caused by Remington bullet, fired from a hill not over 30 paces. Condition on admission, fair. Pulse slow, soft, and compressible. Temperature, 99°. Skin, normal color. Patient in good flesh. Tongue slightly coated. Diagnosis made on *Relief:* Slight abraded wound, 3 by ¾ inches along costal margin, left breast. Gunshot wound, left groin. Entrance midway between anterior superior spine of ilium and symphysis pubis. Wound of exit, left buttock, one-half inch below tuberosity of ischium. Skin undermined about wound of entrance for a distance of 2 inches below wound. Induration surrounding wound of exit. Slight discharge on admission; no odor. Small amount of pus from each wound on pressure. Track of ball irrigated from below, water coming through upper wound free and clear. Gauze dressing applied. Condition remained much the same until

10 a. m. May 5, when temperature rose to 104.8°. Examination of blood showed no plasmodium malariæ.

Operation, May 6, 1900: Both wounds enlarged. Tuberosity of ischium found grooved one-third inch deep along internal surface. Several minute fragments of bone and piece of jacket of bullet ½ by ¼-inch removed. Track of bullet curetted. Through and through rubber drainage tube inserted and antiseptic dressings applied. Temperature dropped immediately after operation, reaching normal on third day.

*Gunshot fracture of thigh.*—J. J. H., sergeant, Company A, Forty-seventh Infantry, United States Volunteers. Transferred to hospital ship *Relief*, from hospital Forty-seventh Infantry, Donsal, Luzon, P. I., May 9, 1900.

Diagnosis on transfer slip: Perforating gunshot wound, left thigh, lower third, with fracture. Wounded in action at Bonaugurau, Luzon, Friday, May 4, 1900. Condition on admission, good. Temperature, 102°. X-ray examination negative. Both wounds foul. Much swelling of thigh and leg. Large ecchymosis around wound of entrance. Diagnosis made on *Relief*: Severe gunshot wound, left thigh. Entrance 4 inches above upper border of patella, passing transversely through, producing compound comminuted fracture of femur. Exit posterior surface median line, on same plane as entrance. Both wounds 1 inch in diameter, evidently caused by Remington. Received in action at Bonaugurau, Luzon, P. I., May 4, 1900.

Operation May 10, 1900: Free incisions made over both wounds. Bone found shattered for distance of 1½ inches above and 1½ inches below line of bullet. Lower fragment of shaft drawn downward and backward behind upper fragment. Eight or ten small fragments of detached and denuded bone, from ½ to 2 inches in length, removed. Ends of upper and lower pieces of bone found denuded for 1 inch and removed with bone forceps. Through and through rubber drainage inserted, wounds packed with iodoform gauze, antiseptic dressings and splints applied.

*Gunshot fracture of thigh.*—L. R., private, Company G, Forty-third Infantry United States Volunteers. Transferred to hospital ship *Relief* from post hospital, Kalbayok, Samar, P. I., May 1, 1900.

Diagnosis on transfer slip: Gunshot wound, right thigh, with fracture femur. Bullet extracted May 1, 1900. Condition on admission, poor, emaciated, restless. Pulse, rapid. Temperature, 102.2°. Diagnosis made on *Relief:* Severe gunshot wound right thigh: Entrance, 4 inches above inner border of patella. Exit at junction of internal and posterior surface of thigh, one-half inch below wound of entrance, producing compound comminuted fracture of lower third of femur. Thigh much swollen and ecchymosed.

Operation, May 2, 1900: Examination showed oblique fracture from above downward and forward at junction of middle and lower third; several fragments of detached bone, ranging in size from ½ to 1 inch, removed. Sinus burrowing upward behind adductor muscles, found and curetted. Counter opening made 4 inches above wound of exit. Three pieces of lead ¼ inch in diameter and one piece denuded bone 2 by ½ inches removed. Wound irrigated. Rubber drainage tube inserted, antiseptic dressing, splints, and extension applied.

*Gunshot fracture of thigh.*—G. A. W., first sergeant Company I, Twenty-third Infantry, United States Army. Transferred to hospital ship *Relief* from regimental hospital Forty-third Infantry, Tacloban, Leyte, P. I., April 30, 1900.

Diagnosis on transfer slip: Gunshot wound, left thigh, probably Remington bullet. Entrance wound anterior internal surface, middle third, causing compound comminuted fracture of femur. Exit, posterior external surface. Severe. In battle with insurrectos at La Paz, Leyte, P. I., April 26, 1900. Condition on admittance, poor. Pulse, small, thin, rapid, and irregular. Temperature, 101.4°. Some emaciation. Complexion, dark and muddy. General exhaustion, all indicating profound sepsis. Wounds of entrance and exit both foul, exuding chocolate-colored grumous pus, extremely malodorous. Thigh greatly swollen and œdematous. Abscess cavity at posterior surface of thigh containing at least 6 ounces of pus.

Operation May 1, 1900: Three detached fragments of bone, each about 1½ by ½ inches, lying in track of bullet, were extracted. Marrow cavity, both fragments, filled with dark, grumous, foul-smelling pulp. This was curretted. Anterior surface of upper fragment denuded for distance of 3 inches from fracture. Line of fracture oblique; extending upward and backward, displacement slight. Amount of shortening ½ inch. Muscular tissue broken down and pulpified in all directions. Numerous sinuses filled with pus were opened and cleansed. Through and through rubber drainage tubes inserted. Cavities thoroughly flushed and packed and antiseptic dressings and splints applied. Throughout the operation patient's pulse were weak and irregular, necessitating several injections of strychnine and atropine. On recovering consciousness, condition still being bad, two quarts of saline infusion were given subcutaneously. Patient rallied somewhat from the immediate effects of the operation, but died from exhaustion and sepsis twenty-four hours later.

*Gunshot wound of thigh, etc.*—H. C., corporal, Company A, Forty-third Infantry, United States Volunteers. Transferred to the hospital ship *Relief* from First Battalion hospital, Forty-third Infantry, United States Volunteers, Tacloban, Leyte, P. I., April 30, 1900.

Diagnosis on transfer slip: Gunshot wounds as follows: Bullet entered left leg at outer surface, upper third of thigh, and emerged from inner surface same region, passing behind bone; then entered right leg, inner surface, lower third of thigh, and lodged against bone, from whence it was removed. Severe. Contused lacerated wounds (slight), as follows: One, back of left elbow; one, outer surface, left arm; and one, anterior surface, right wrist. Wounds in leg inflicted by Remington bullet, and those in arm probably by chips fired from a gun. Fired upon by insurrectos on April 27, 1900, while traveling the road between Tacloban and Polo, Leyte, P. I. General condition, good. Diagnosis on *Relief:* (1) Severe gunshot wound left thigh. Entrance, 6 inches below and 1 inch posterior to great trochanter; direction, inward, emerging same plane as wound of entrance, on inner surface (bone not involved); then entered (2) right thigh, on internal surface, 4 inches above internal condyle. No exit. Wound of entrance in left thigh presents sloughing surface 1½ inches in diameter. Exit wound clean, one-half inch in diameter. Through-and-through rubber drainage established, and antiseptic dressings applied. Wound in right thigh 1½ inches in diameter and very ragged, penetrating to depth of 2 inches. Patient states bullet was extracted from this wound. Bone not involved. Wound irrigated and packed with gauze. Antiseptic dressings applied. (3) Slight abraided gunshot wound, posterior surface, center of left forearm, 2 inches long; direction vertical. (4) Slight abraded gunshot wound over internal condyle, left humerus. (5) Slight penetrating gunshot wound, anterior surface right wrist. X-ray examination showed small foreign body lying in front of base of fifth metacarpal bone.

Operation, April 30, 1900: Incision made and two fragments of shell, each one-fourth inch in diameter, removed. Incision sutured. Antiseptic dressings applied.

*Gunshot fracture of thigh.*—E. E. S., private, Company M, Fortieth Infantry, United States Volunteers. Transferred to hospital ship *Relief* from post hospital, Cagayan, Mindanao, P. I., April 11, 1900.

Diagnosis on transfer slip: Perforating gunshot wound, right thigh, with fracture of right femur. Bullet entered near trochanter, and passing toward the left, emerged on inner aspect of leg. Exact character of bullet not known. Also a perforating incised wound of left leg from a spear. The spear entered on outer aspect of thigh 3 inches above knee and emerged on outer aspect of leg 3 inches below knee. Injury received in engagement with insurrectos at Cagayan, Mindanao, P. I., April 7, 1900, during an attack on the town at 5 a. m. General condition, excellent. Diagnosis made on *Relief:* (1) Severe gunshot wound, right thigh. Bullet entered outer surface one-half inch below great trochanter, passed inward and backward, fracturing femur, emerging posteriorly at gluteal fold, 1½ inches from anal orifice. (2) Severe contused wound, left lower extremity, inflicted with a spear. Spearhead entered on outer aspect of thigh 3 inches above knee and emerged on outer aspect of leg 3 inches below knee, severing larger part of head of fibula. Received in action at Cagayan, Mindanao, P. I., April 7, 1900.

Operation, April 12, 1900. Wounds right thigh clean. Simple dressings and splints applied. Wounds left thigh and leg very foul and covered with fungous granulations. Spear wounds enlarged, cleansed, and swabbed out with pure carbolic acid, followed by alcohol. Severed piece of head of fibula three-fourths inch long removed. Abscess cavity found in popliteal space, left side, immediately behind track of spear. Opened, irrigated, and curetted. Two large rubber drainage tubes inserted, one from thigh wound to popliteal opening, other from leg wound to popliteal opening. Antiseptic dressings applied. Wounds right thigh healed in a few days, leaving small linear scars scarcely visible in five weeks' time; evidently caused by Mauser. Much displacement forward and outward of upper fragment. Inclined plane 2 feet high at base placed under limb. Twenty-five pounds extension applied. Heavy pad placed over upper fragment. Position of fragments with these appliances was good. Irritation of skin at points of pressure was so great, due to heat and profuse perspiration, that extension and pressure over upper fragment had to be frequently removed and ulcerated skin treated. Due to this, and in spite of numerous devices tried, this fracture united with 3 inches of shortening and much deformity of the upper fragment. The wound of the left lower limb healed slowly by granulation.

Operation May 25, 1900: Pressure on the sharp projecting upper fragment of the right femur became so great as to indicate speedy ulceration. An incision was made and 1½ inches of bone removed with bone forceps. The incision was closed and an aseptic dressing applied.

*Gunshot fracture of femur.*—C. M., sergeant, Company I, Fortieth Infantry, United States Volunteers. Transferred to hospital ship *Relief* from post hospital, Cagayan, Mindanao, P. I., April 11, 1900.

Diagnosis on transfer slip: Penetrating gunshot wound of left thigh. Bullet entered just in front of trochanter and, passing diagonally backward, lodged just under skin in left buttock. Left pelvic bone probably suffered partial fracture, but left hip joint and femur apparently escaped injury. Injury received in engagement with insurrectos at Cagayan, Mindanao, P. I., April 7, 1900, during an attack on the town by the insurrectos at 5 a. m. General condition on admission, fair. Temperature, from 101° to 102°. Pulse, 120. Diagnosis on *Relief:* Severe gunshot wound, left thigh. Bullet entered laterally below great trochanter, passed diagonally backward, and lodged under skin of left buttock, about 2½ inches from anal orifice.

Operation, April 12, 1900. Wound foul. Upper portion of femur extending 1½ inches below great trochanter found shattered. Left ilium partially fractured from acetabulum upward. Incision made through skin over bullet, which, with several fragments of denuded bone from 1 inch to 2 inches long, was removed. Through-and-through rubber drainage inserted. Wound packed with iodoform gauze. Antiseptic dressings and splints applied. Temperature and pulse remained about the same as before the operation. Patient grew steadily weaker and more apathetic. A week after operation a distinct odor of dead bone was perceptible on changing dressings.

Operation, April 21, 10 a. m.: Head of femur excised. Tip of lower fragment sawed off. Excised fragment found carious. Wound packed with gauze and dressings applied. Throughout operation patient's pulse very weak and irregular. Hypodermic injections of strychnine given up to one-tenth grain. Also warm saline infusions injected under skin of flanks up to 2½ quarts. Patient regained consciousness and conversed with those near by, but sank rapidly again, and died at 3.15 p. m., April 21, of septicæmia and shock.

*Gunshot fracture of femur.*—W. D. H., private, Company I, Thirty-eighth Infantry, United States Volunteers. Transferred to hospital ship *Relief* from hospital Thirty-eighth Infantry, Batangas, P. I., March 26, 1900.

Diagnosis on transfer slip: Severe gunshot fracture (Mauser) lower third, right thigh. Ball entered outer aspect of thigh, just below middle, passing slightly downward to inner side of thigh. No exit. Received in action near Cuecera, Luzon, P. I., March 15, 1900. X-ray examination showed fracture of femur at junction of middle and lower thirds, with bullet lying against bone on inner side. General condition poor.

Operation, March 27, 1900. Wound foul. Incision two inches long made on inner side of thigh. Dissection made down to femur; deformed Mauser bullet extracted. Foul wound of entrance curetted. Several small loose fragments of bone removed. Wound irrigated, rubber drainage inserted. Antiseptic dressing, splints, extension, and counter extension applied. May 10, good union of bone. Wounds nearly healed.

Operation, May 26, 1900: Both wounds are closed. Patient has had for several days an irregular temperature, ranging from 100° to 103°, with some pain in region of the fracture and slight fluctuation on anterior surface of thigh over seat of fracture. Old wounds were incised. About one-half ounce of sanious pus removed. An opening 1 inch long by one-fourth inch wide was found on posterior surface of femur, leading into marrow cavity. Marrow cavity smooth and empty for distance of about 3 inches in each direction. Rubber drainage inserted into marrow cavity in each direction and antiseptic dressings applied. Temperature normal the following day.

*Gunshot injury of femur.*—W. M., private, Company I, Twenty-third Infantry, United States Army. Transferred to hospital ship *Relief* from hospital First Battalion, Forty-third Infantry, United States Volunteers, Tacloban, Leyte, P. I., April 30, 1900.

Diagnosis on transfer slip: Gunshot wounds as follows: (1) Small-caliber bullet, probably Krag or Mauser, entered right leg 2 inches to right and below anterior superior spinous process of ilium, ranged downward and inward, and emerged from posterior internal portion upper third of thigh. (2) Remington bullet entered inner side left instep and, passing downward, emerged from sole of foot beneath instep. During attack at La Paz, Leyte, P. I., April 26, 1900. Moderately severe. Condition on admission, fair. Temperature, 101°. Extremely anæmic. Diagnosis made on *Relief:* (1) Severe gunshot wound right thigh. Entrance, outer side right thigh, 3 inches below anterior superior spine of ilium; exit, at junction of internal and posterior surface, 2 inches below gluteal fold. Entrance wound, one-third inch in diameter; exit, same size. Free motion. Hip joint not involved. Slight purulent discharge from both wounds. Much ecchymosis on internal posterior surface of thigh, extending 5 inches below wound of exit. Foreign body felt on palpation 2 inches below wound of exit. Incision made, under cocaine (May 3, 1900), and deformed

Remington bullet with shell removed, each lying separately. Dressed antiseptically. (2) Slight gunshot wound of right foot, 2½ inches below internal malleolus. Exit, center of plantar surface, 2 inches from wound of entrance. Entrance wound, 1 inch in diameter; exit wound, one-half inch in diameter. Both irregular. Bone not involved. Drainage inserted and antiseptic dressing applied. Temperature dropped to 99.2° second day after admission, or sixth day after injury; ranged between 99.2° a. m. and 100° p. m. until May 6, sixth day after admission or tenth day after injury, when he experienced a slight chill at 10 a. m., followed by rapid rise of temperature, reaching maximum of 104.6° at 7 p. m. Temperature of following morning, 102.6°. Patient complained of much pain and tenderness along the bullet track; slight swelling just below Poupart's ligament, with pain on pressure.

Operation, May 7, 1900: Wound of entrance found healed. Vertical incision 4 inches long made, with wound at center of incision; dissection made down to great trochanter; nothing abnormal found. Wound of exit exuding small amount of grumous pus; this wound enlarged by vertical incision 4 inches in length. Large sloughing sinus found extending down to bone just above lesser trochanter. Deep groove found extending obliquely from above downward across anterior surface of shaft just above lesser trochanter. Numerous small fragments of bone, together with fragment of brass-jacketed Remington one-half by one-half inch, removed. Muscular tissue surrounding the sinus much softened and broken down. Cavity curetted and large drainage tube inserted from wound of entrance to wound of exit in front of bone. Cavities packed with iodoform gauze and antiseptic dressing applied.

*Gunshot wound of thigh.*—C. L. B., corporal, Company D, Fortieth Infantry, United States Volunteers. Transferred to hospital ship *Relief* from hospital, Neuva Caceres, Luzon, P. I., May 7, 1900.

Diagnosis on transfer slip: Gunshot wound, upper third right thigh. General condition on admission, good. Wound foul. X-ray examination negative as to foreign body. Femur seen clearly throughout entire length and found not fractured. Diagnosis made on *Relief:* Moderate gunshot wound, right thigh. Entrance: At apex of Scarpa's triangle. No exit. Received in action near mouth of Rio Picol, southern Luzon, P. I., February 27, 1900.

Operation, May 9, 1900: Wound enlarged by vertical incision, and drainage tube, 5 inches long, discovered and removed. This tube was lying at a depth of 1 inch below surface, and according to patient's statement had been there since shortly after injury, two months before, it being supposed to have slipped out of the wound during change of dressings, and to have been lost. The sinus formed by this tube was curetted and packed with iodoform gauze and antiseptic dressing applied.

*Gunshot fracture, knee joint.*—G. W. H., private, Company I, Forty-seventh Infantry, United States Volunteers. Transferred to hospital ship *Relief* from regimental hospital, Forty-seventh Infantry, United States Volunteers, Legaspi, P. I., May 2, 1900.

Diagnosis on transfer slip: Penetrating gunshot wound, inner side right kneejoint. Received in action near Malabog, April 20, 1900. Condition on admittance, fair. Pulse, full and rapid. Temperature, 102°. Skin, sallow. Tongue covered with yellow coating. Entire right leg swollen from center of thigh down. Marked œdema below wound. Both incisions, together with wound of entrance, exuding thick, creamy pus. Dressing saturated. Foul odor. Diagnosis made on *Relief:* Severe gunshot wound. Entrance, one-half inch behind and one-half inch below internal tuberosity, right tibia. No exit. Two additional openings in postero-internal surface, one 2 inches below popliteal space, one 7 inches below popliteal space. Drainage tube connecting both wounds.

Operation, May 3, 1900: Wound of entrance enlarged. Lower surface, inner tuberosity of tibia, found shattered; numerous fragments of bone removed. Mauser bullet in two fragments, together with fragments of shell, found and removed. Bone curetted, rubber drainage tube inserted, cavities packed with iodoform gauze, and antiseptic dressings applied. Temperature dropped immediately, reaching normal third day after operation.

*Gunshot fracture of fibula.*—M. J. E., private, Company H, Forty-third Infantry, United States Volunteers. Transferred to hospital ship *Relief* from post hospital, Kalbayok, Samar, P. I., May 1, 1900.

Diagnosis on transfer slip: Gunshot wound, calf of right leg. General condition, fair. Temperature, 100°. Diagnosis made on *Relief:* Severe gunshot wound, right leg. Entrance, inner side of calf, 5 inches below internal condyle. Exit, outer surface, 4 inches below head of fibula, one-half inch anterior to wound of entrance. Fibula fractured. Both wounds slightly purulent. Received in action at Catubig, Samar, P. I., April 19, 1900.

Operation, May 1, 1900: One and one-half inches of shattered fibula removed. Drainage tube inserted, connecting both wounds. Irrigated and antiseptic dressing applied.

*Dagger wound of arm.*—R. M. L., corporal, Company G, Forty-third Infantry, United States Volunteers. Transferred to hospital ship *Relief* from post hospital, Kalbayok, Samar, P. I., May 21, 1900.

Diagnosis on transfer slip: Punctured wound by dagger, left arm, flesh. Diagnosis made on *Relief:* Severe punctured incised wound, by dagger, left arm. Received in action at Kalbayok, Samar, P. I., April 26, 1900. Entrance, middle of anterior surface, left arm, 3 inches above bend of elbow. Wound transverse, 1¼ inches long. Exit, posterior surface of arm on plane 1½ inches above wound of entrance. Both wounds entirely healed when patient was admitted. Bone apparently not injured. Section of musculo-spiral nerve, manifested by wrist drop and paralysis of extensor muscles of forearm. Biceps partially severed.

Operation, May 6, 1900: Incision (vertical) 2 inches long, posterior surface of arm, in line between biceps and triceps; musculo-spiral nerve found severed and ends retracted, each end curled upon itself. Large bulbous swelling on proximal end. Bulbous swelling excised, distal end fastened. and nerve sutured. Incision closed and antiseptic dressing applied. Wound healed by first intention, but no recovery in function of nerve occurred.

*Bolo wounds.*—F. E. F., private, Company I, Fortieth Infantry, United States Volunteers. Transferred to hospital ship *Relief* from post hospital, Cagayan, Mindanao, P. I., April 11, 1900.

Diagnosis on transfer slip: Diagonal incised wound right arm, lower third, outer aspect, 3 inches long, and in depth extending to the bone. Transverse incised wound 3 inches long on left side of neck, having its center 2½ inches below left ear. Transverse incised wound across dorsum of left scapula 6 inches long and in depth extending to the bone. Diagonal incised wound beginning near posterior termination of preceding and extending downward and forward across posterior termination of axillary fold onto outer aspect of left arm. Length of wound, 8 inches. All these wounds were inflicted by bolos in hands of insurrectos during an attack by them upon the town of Cagayan, Mindanao, P. I., at 5 a.m., April 7, 1900. General condition, good. Wounds nearly healed. Wrist drop and paralysis extensors right forearm.

Operation, April 12, 1900: Wound opened. Long head biceps found severed. Musculo-spiral nerve half severed, bruised, and softened. Injured portion resected, nerve ends sutured with fine silk. Ends of biceps fastened and sutured. Skin sutured. Four days after operation wound found infected; opened, irrigated, and packed with iodoform gauze. Condition May 31: Wound healed by granulation. Extension regained in fingers. Pronation in forearm. No improvement in wrist drop.

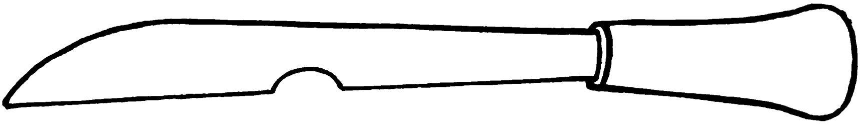
*Bolo wound of neck, reported June 1, 1900, by C. F. de Mey, acting assistant surgeon, Bongao, P. I.*—Sergeant Egbert V. de Wolfe, Corporal McGatt, Musician William F. Carter, Private Webster F. Gibbons, and Private John Greathouse, all of Company H, Twenty-third Infantry, left this post January 27, 1900, for Lawi-Lawi Island on a hunting pass. On January 29 the party was surprised by a number of hostile Moros armed with parongs or bolos. At the time of the attack Corporal McGatt was bathing in a creek some distance away, and thus escaped harm. The Moros stole upon the others, who were playing cards, from the rear. Sergeant de Wolfe was instantly killed, being almost decapitated at a blow. Private Gibbons died shortly afterwards from his wounds. Musician Carter was wounded in the back, and private Greathouse, the subject of this report, received a dangerous cut in the neck.

His injury was an incised wound of the severest type, so severe, indeed, that his recovery therefrom is little short of marvelous. It extended along the right side of the neck from a point immediately over the axis to a point half an inch from the mental process. The extent and gravity of this wound may be inferred from the following data: It was 7 inches in length by 6 inches in width. It divided the trapezius, sterno-mastoid, platysma, and masseter muscles, severed the occipital and external carotid arteries and external jugular vein, laying bare the axis and internal carotid artery, which vessel only escaped by a fraction of an inch. The facial artery remained uninjured, owing to a defect in the blade of the knife. It will be seen on examining the sketch of the parong, inclosed herewith, that the edge is notched by a curved indentation, a little more than halfway from the point to the handle, in the dullest portion of the blade. The blow must have been a backhanded one, delivered from the right and to the rear of the victim. This brought the indentation opposite the facial artery, over which it formed a bridge on the ramus of the jaw. It tore out a piece of flesh 3½ by ½ inches from the neck. On infliction of the wound the man's head was drawn over onto his left shoulder by the traction of the muscles on that side. In this condition he remained for sixteen hours before I saw him. The only treatment he received was at the hands of Corporal McGatt, the unwounded man.

This consisted in tying a handkerchief, previously soaked in sea water, over the gaping wound. This same corporal brought back the dead and wounded to the post. When the nature of the wound and the injury to the vessels and tissues involved are taken into consideration, together with a rough voyage in an open boat for a distance of 34 miles, it is wonderful the man survived the hemorrhage and shock.

On examination the edges of the wound were found to have shriveled and turned inward, due, no doubt, to the astringent action of the sea water, which is very marked in these parts. The external carotid had retracted within its sheath, but was still bleeding slightly. The ramus of the jaw was fractured from the impact of the parong, and several spiculæ of bone were removed. The wound was packed with antiseptic gauze, drainage inserted, and the edges brought into opposition by eleven stitches. In twenty-four hours examination showed that, owing to long previous exposure, asepsis could not be obtained. Several sutures had torn loose, owing to degeneration of the surrounding tissues. I then decided to abandon the effort to secure union by first intention and let the wound heal by granulation. This it did, with proper attention, in seven weeks.

The recovery of a subject from a wound of this severity has never been paralleled in my experience. He is in the best of bodily health and physical condition at the present time, and is apparently none the worse for his experience, beyond the loss of lateral and rotary motion of the head upon the axis, which will partially return in time.



LENGTH OVER ALL 15 INCHES — HANDLE 5 INCHES

## FILIPINO SANITARY CORPS.

In a report dated June 13, 1900, Maj. Charles F. Mason, surgeon, Twenty-sixth United States Volunteers, gave a brief account of the sanitary corp of the insurrecto army on the island of Panay, as it existed up to November 9, 1899, when our advance from Iloilo disorganized and scattered their troops. The personnel consisted of 1 chief with the rank of lieutenant-colonel, 1 director and 1 subdirector with the rank of major, 4 captains, 10 lieutenants, and 140 litter bearers. Only 2 of the officers (the chief and the director) were medical graduates (medicos titulares); the others were students or practicantes. The equipment was crude, scanty, and improvised. The litter bearers were provided with bags containing a few bandages, dressings, and a paper of iodoform. The litters were improvisations of bamboo, borne each by two bearers; but hammocks also were much used, swung from a bamboo pole on the shoulders of two or four men. There were no wheeled vehicles. Four stations were established at suitable points near their trenches, from which, after first aid had been given, sick and wounded men were sent to the base hospital at Santa Barbara. This hospital occupied several private houses, and was fairly well supplied with cots, medicines, and dressings. The two medical graduates were stationed here. All the members of the sanitary corps served without pay, and, according to Major Mason, their work was exceedingly creditable.

## FIELD MANEUVERS OF THE GERMAN ARMY, 1899.

The following report by Dr. John McG. Woodbury, on medico-military conditions in the German army, as seen by him during the field maneuvers of 1899, is submitted as of interest to our medical officers serving in the field:

BERLIN, *October 1, 1899.*

SIR: I have the honor to report that upon receipt of your commission and instructions, June 25, I sailed for Germany, proceeded to Berlin, and reported at the United States embassy there. The following day I was introduced to the Reichscancellor, Prince Hohenlohe, by his son. This was a social and not a formal embassy presentation. The following day he invited me to dine to meet the surgeon-general of the German army, who detailed an officer of the same rank as my own to accompany me to whatever points of interest I might find in Berlin, especially recommending the inspection of the Kaiser Wilhelm's Academy, the train depot, the Lazareth Elizabeth, the casernes of the First Guard Dragoon Regiment, and the Kaiserin Augusta Regiment No. 4. These I duly visited, after calling formally, in company with Mr. Jackson, our chargé d'affaires, upon the ministry of foreign affairs, and, in company with Captain Allen, upon the ministry for war and the surgeon-general.

My papers, together with the formal application from the State Department to the foreign office of the German Empire for permission to inspect and study the medico-military conditions of the German army in active field maneuvers, being transmitted to the proper authorities, I received word that I should be presented to the Emperor after the parade, September 1, 1899, in the Tempelhoferfeld, and that I should report at the general-kommando of the Sixth Armee Korps, upon the 8th of September, in Breslau.

A mount being provided for me by order of the foreign office at the caserne of the First Dragoon Guard Regiment I rode at the parade, in the Tempelhoferfeld, and at the finish of the review was presented to His Majesty, who received me with great cordiality and kindness, saying that "all medical and sanitary information should be at the disposition of the United States Government."

Upon September the 8th I presented myself at the general kommando of the Sixth Armee Korps, in Breslau, received instructions to proceed at once to the stadsquartier of the Twenty-second Infanterie Brigade, in Schildberg, in Posen. I proceeded at once to Schildberg and reported to General-major and Brigade Kommandeur Graf von der Goltz. I was most heartily received, and, beginning with regimental formation, had opportunity to study in quatier-nothquatier and in bivouac the German army, as represented by the Sixth Armee Korps in active field operations along the Russian frontier. Thus I was permitted to observe and study the methods of feeding commands, and the preparation of food in the companies, with the methods of sleeping the men in bad weather, and to study the relationships existing between the officers and the enlisted force.

From the headquarters of Graf von der Goltz I was transferred to the headquarters of General-major and Divisions Kommandeur Stephani, where I had opportunities to study organization and arrangement for the division; and from there again transferred to the headquarters of the Hereditary Grand Duke of Saxe-Meiningen, commanding the Sixth Armee Korps.

Every opportunity was given me to be present at the various inspections, also, in accompanying the maneuvers, to observe the location of the various dressing stations upon the field of battle; also the methods for transportation and the care of the wounded. This armee korps was fully equipped and the sanitats detachment had the quota of field hospitals, medicine wagons, litters, and bearers.

### MEDICAL SERVICE.

The medical service is directly under the medical division of the war ministry, and is presided over by the surgeon-general of the army, who at the present time has the rank of lieutenant-general. The medical corps consists of:

(1) Military doctors with assimilated grades of commissioned officers (sanitats offizier korps).

(2) Military doctors graded as noncommissioned officers (sanitats unteroffiziere).

(3) Nurses, sick bearers, and hospital attendants.

The following are directly subordinated to the surgeon-general: The Kaiser Wilhelm Academie; the examining commission for surgeons; the corps surgeons above major, called general-arzte.

### CORPS SURGEONS.

The corps surgeons, colonels or higher, take charge of the corps sanitary service under instructions of the corps commanders and the surgeon-general. In each corps sanitary bureau there is one surgeon with the rank of lieutenant, one corps apothecary, and ordinarily one attached surgeon, with the rank of captain, who is at the head of the microscopic station of hygieno-chemical research. The economic administration is entirely under the corps intendancy.

### MEDICAL OFFICERS WITH TROOPS.

1. Each division has a division surgeon with the rank of colonel, who is adviser of the division commander. He conducts sanitary measures within the division, and is chief surgeon of the garrison hospital at division headquarters unless otherwise provided by order.
2. Each infantry or railway regiment has a regimental surgeon with the rank of major or captain, and two battalion surgeons with the rank of captain.
3. Each cavalry regiment has one regimental surgeon with the rank of major or captain, and most regiments have also one to two surgeons with the rank of lieutenant.
4. Each artillery regiment has one regimental surgeon with the rank of major or captain, one section surgeon with the rank of captain, and one or two surgeons with the rank of lieutenant.
5. Each foot artillery regiment or independent battalion has one surgeon with the rank of captain; some have also one surgeon with the rank of lieutenant.
6. Many train battalions have each one surgeon with the rank of lieutenant.

Besides the troop surgeons there are various surgeons detailed to garrisons, to hygieno-chemical research stations, and to hygieno-chemical laboratories at certain corps headquarters.

The principal sanitary depot is in Berlin.

Each garrison hospital at corps headquarters has also a sanitary depot and a hospital pharmacy. Small hospitals have also medical and surgical stores. Four army corps have convalescent homes.

Medical officers are obtained from military surgical institutions or from graduates of other medical schools, the Kaiser Wilhelm's Akademie being the principal preparatory school.

Hospital attendants are taken from the ranks after not less than six months' service and trained in the lower branches of the sanitary service. After passing the prescribed examination they may be employed in hospitals or remain with the troops. Each army corps trains annually from 40 to 50 nurses, and litter bearers as needed.

### FIELD MEDICAL SERVICE.

The medical units are: Medicine-wagon detachments, sanitary companies (sanitats-detachment), field hospitals, etappe hospitals, and war hospitals; the latter may be assigned to divisions. The medicine-wagon detachment—having 4 litters and 2 bandage knapsacks, with the necessary personnel taken from the troops—is the smallest unit. This would have one or more surgeons, two or more hospital attendants, 16 sick bearers, at the rate of 4 per company, and musicians trained as sick bearers. The troop or first dressing stations established by these units are not intended for each separate battalion, but they are combined, and, as a rule, are later submerged into the chief dressing stations (hochverband platz) of the sanitary company. Half of the sanitary personnel remains with the troops, the other at the dressing stations. This ambulance detachment is nevertheless the unit of the battalion, as far as such a unit exists. Every soldier is provided with a dressing package.

The personnel of a sanitary company consists of 8 doctors, 2 captains, 6 lieutenants, 8 hospital attendants, 8 nurses, and 176 sick bearers, corresponding to our field-hospital detail. It is divided into two platoons, and can establish two principal dressing stations. It is provided with 8 two-horse ambulances, 2 sanitary wagons, and 13 ordinary wagons, with 56 to 72 litters. Besides these, requisition wagons with straw obtained from the division intendant or returning provision and train wagons may be used.

The field hospital, of which each army corps has 12, has 200 beds, and is divided into two platoons. It has 8 surgeons, 2 captains, 6 lieutenants, 9 hospital attendants, 12 nurses, 1 supply wagon, 4 ambulances, 1 sanitary wagon, 5 medicine chests, and 5 litters. Some of the field hospitals are established as near the firing lines as immunity from the hostile fire and capture will permit, the others remain with the columns and trains. Field hospitals are directly under the command of the corps, unless they be assigned to divisions, in which case they are under the division commander.

As the troops advance, the field hospitals that have been installed are turned over to the officials in charge of the line of communications, and thus become etappe hospitals, or they are converted into permanent war hospitals. Ordinarily one platoon of each field hospital remains behind.

The idea being, however, to maintain the field hospitals as nearly as possible a strictly mobile unit, all sick and wounded are at once sent to the rear and transferred to base hospital by railway, so emptying the field hospital and permitting its organization and equipment to move forward with the advancing line.

The following diagram shows the general system employed from the field of battle to the final destination of the wounded:

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|---|---|---|---|---|
| Field of battle. | Medicine wagon detachments: Battalion units; first dressing stations. | Severely wounded: field hospitals. | Nontransportable: Permanent field hospitals.<br>Transportable: Sent to etappe hospitals; thence (by auxiliary hospitals and hospital trains) ................ | Home.<br>Reserve hospitals (private).<br>Red Cross hospitals. |
| | Sanitary companies: Division units; 2 platoons each; principal dressing stations | Slightly wounded. | Remain with the troops.<br>Directed to an assembly point and marched to etappe hospitals. | |

1. *The Kaiser Wilhelm's Academy at Berlin.*—Place of instruction medical officers; course lasts five years; entrance obtained by examination; average age of student on entrance, 16; earlier courses general; last two years entirely practical hospital service in the hospitals of the various garrisons.

2. *Train depot at Berlin.*—This contains all the transportation for the First Army Corps; also all the medicine wagons, ambulances, and transportation for field hospitals of the First Army Corps. It is under the charge of an intendant, who is responsible for the property, no medical officer being responsible for any transportation or for any drugs, medical supplies, or equipment until they are issued at hospital. The entire part of this responsibility rests in the train department.

> NOTES.—Amount of wagon train and transportation. See special paper of medical service.
>
> Amount of railway transportation and equipment for sick and wounded: Six railway trains of 36 carriages each; the equipment entirely prepared and ready in Berlin; 6 in Breslau and Russian frontier; 6 in Strasbourg.
>
> The commissary and quartermaster's department being responsible for the delivery to the battalion of all food rations and commissary supplies, the necessary transportation for such supplies is attached to the general train and quartermaster's department and not to the regimental transportation.

Caserne des ersten Garde Dragoner Regiment, Caserne der Kaiserin Augusta's Regiment, Caserne des Kronprinz Friederich's Regiment No. 11:

Casernes built of stone; wooden floors, laid on stone and cement; stone and metal stairway; no wood in walls; building fireproof. The newer type is constructed so as to contain quarters for each battalion in a separate building. The cubic air space allowed for sleeping quarters is 15 cubic meters per man; the floor space, 5 square meters per man. The mess room and canteens are in separate buildings from the sleeping quarters, and here the floors are, as a rule, tiled. Cooking is done by steam kettles, and a meat ration is rarely roasted. When so cooked it is prepared by broiling. A subaltern commissioned officer sleeps on the same floor and in front of company command. A subaltern commissioned officer inspects and eats of each meal every day when cooked and ready for issue to the men of his command. The lavatories and baths are in separate buildings, detached from sleeping quarters. Sleeping quarters contain no plumbing. Civilian employees are used as scavengers.

*Sinks.*—These are always placed in separate house from either sleeping or eating quarters of the men. They are arranged so as to give ample accommodations for each battalion. The commissioned officer is responsible for their sanitary condition, but they are kept clean and in order by civilian employees, who are paid to act as scavengers. They are inspected very frequently every day by first sergeants, and if not in order the scavenger is called to account. Special attention is being paid in the remodeling of old casernes and in the building of new ones to having these sinks properly constructed, thoroughly ventilated and drained.

*Sinks in bivouac.*—These are trenches dug 4 feet deep, 3 feet wide at the top, 2 feet at the bottom, over which is erected a rail resting on crossed stakes at either end, each man after usage being required to cover his movement with earth. A spade is kept at the sink for this purpose. The seating capacity is 16 places for every 100 men. When the troops move off the ground these trenches are completely filled, and as the same ground is never occupied by troops more than twenty-four hours, no disinfectant is necessary.

> NOTE.—A descriptive list, written upon parchment with indelible ink, is sewn inside the inner pocket of the coatee, so that each man carries with him his own descriptive list, which can not be destroyed in any way except by fire.

3. *Lazareth Elizabeth.*—Excellent military hospital in perfect order. Quality and amount of food equal to our own; preparation better. Each patient has a wine ration. General construction of all base hospitals on pavilion plan.

NOTE.—Tentage is never used in Germany for hospital purposes except in extreme cases of necessity in the first dressing station or brigade section of field hospital; soldiers are at once quartered in requisitioned buildings; this is a general policy. The pavilions built of brick, 2 stories in height, fireproof. All sinks and lavatories separated by a double partition. Operating theater of glass and marble, in separate buildings, connected by a cloister corridor.

*Organization.*—Surgeon in command, rank of lieutenant-colonel; two assistant surgeons, rank of captain; internes, students from the Kaiser Wilhelm Akademie; hospital orderlies, men of third year's service desirous of entering sanitary corps. Here instruction is given to those soldiers of the sanitary corps desirous of becoming Lazareth's helfer—our hospital steward.

*Clothing.*—The underclothing consists of socks or fusslappen, and these must be provided by the soldier himself. He may wear either he likes, using his own discretion.

NOTE.—Fusslappen: These are made of linen, canton flannel, or knitted woolen material, varying with the temperature and moisture of the feet. They are about 4 inches wide by 18 inches long and are put on by being wrapped about the foot, starting one end smoothly under the ball of the great toe and winding like a bandage over the back of the foot from within outward, finally covering the heel, and the last corner being laid smoothly across the instep. The stockings are of the ordinary cotton or woolen manufacture.

The drawers are of canton flannel of a good quality, the shirt of flannel mixed with cotton. A new issue which is to be made will make this shirt a knitted one. The trousers, of a coarse woolen material, are cut fairly loose. The coatee, a short frock in cut, is single-breasted and also of wool. The overcoat is long, without a cape, with a collar which may be turned up and held in place by a little hood, which is concealed in a pocket in the collar; in extreme cold weather or rain can be put on underneath the leather helmet. This helmet is admirably adapted for shelter from sun and rain, the lip behind keeping the wet out of the back of the men's necks. The boots are of leather, the new issue being fair leather, are strong, heavy, and dressed only with grease. On a march trousers are always worn in them, the leg of the boot forming an excellent legging. The shoes are of leather, with canvas upper part where the lacing comes, and are only used indoors or upon fatigue service, the boot being always worn on duty.

Each man has a brown linen fatigue suit, trousers cut loose, jacket cut Eton style, but buttoned tight to the throat. This is of heavy drab-brown linen, about the weight of No. 6 canvas. All buttons are of solid metal; no hollow buttons, as in our service. Each man has a small fatigue cap, without peak or visor. This clothing is never varied, either winter or summer.

*Bedding.*—In barracks the beds are ticks of canvas filled with straw upon a canvas tightly stretched in an iron frame. Each man is allowed one blanket, lighter in color than ours and not as good in quality, two sheets of coarse linen, a pillow stuffed with hair, and a pillowcase.

In the field the men sleep upon straw obtained by requisition.

*Food.*—The quantity is sufficient, being half a pound of meat per day per man; a pound of fresh vegetables, potatoes, onions, beans, etc.; a ration of split peas or beans for soup, and 2 ounces of coffee, chocolate, or cocoa.

NOTES.—The quality is excellent.

All fresh meat is inspected by the regimental medical officer before issue, and he is responsible for its condition.

In barracks all food is prepared in kitchens separate from the sleeping quarters and cooked in steam kettles and boilers, usually in the form of stew and thick soup. The bread is heavy rye, raised with yeast, no hard bread being issued except in emergency. The ration is never varied in winter or summer, but I understand that it is varied in the German colonies in Africa and elsewhere by a further addition of rice and green vegetables. For quantities and description of difference between garrison and field ration see Major Allen's report. The constituents and character of the emergency field ration consists of 2 pounds of hard bread, 1-pound tin of preserved meat, 1-pound tin of preserved peas. (N. B.—These preserved peas contain considerable lard.) All issues are made from the intendant's bureau and brought directly to the battalion.

*Field cooking arrangements.*—Each man carries his own, consisting of a tin, rather oval in its short diameter. In this his provisions are carried, and when the top or lid is removed the bottom can be used as a kettle and the top as a coffeepot. In the field, usually, two men mess together, one making soup in the bottom of his pail, while the other makes coffee in the bottom of his, the tops being used as plates. There are no scraps, and there is no waste.

*Equipment.*—Cooking tin or provision canister carried on top of the knapsack, about 10 inches long by 4 wide by 3 in its short diameter. This is made of aluminum in the new equipment.

Canteen or water bottle; old equipment made of glass covered with leather; new equipment made of aluminum covered with leather; holds one quart.

Note.—No haversack.

Knapsack made of horsehide with the hair on, waterproof; contents, 1 pair of shoes, two extra pair of socks or fusslappen, brown linen fatigue suit, shaving materials, soap and towel, needles, thread, a lump of tallow, 50 rounds of ammunition, a pound of bread, and what conserves he may have issued to him. The overcoat with the shelter tent, which latter resembles ours, save that it is brown in color, is rolled and made over the edges of the knapsack. No blanket roll slung from shoulder to hip is allowed. Every second man carries a spade or mattock, while two men in each company carry folding canvas buckets.

Note.—Total weight of each man's equipment, pack, and piece, 60 pounds.

Cartridge boxes of leather, two in front and one behind. No cartridge belts used.

*Medical department.*—General management of permanent military hospitals—organization and equipment same as civil hospitals.

*Organization.*—Officer with the rank of lieutenant-colonel, medical department, in command. Detail of two assistants of rank of captain. A superintendent has entire charge and responsibility for all medical stores; also of all food and clothing, receives the same and issues it, superintends kitchen and inspects food, and does generally the work of quartermaster and commissary combined. This intendant would correspond to superintendent of a hospital in civil life; is always a civilian, and has no rank as an officer. The furniture, instruments, and medical and surgical equipment are all of the very best and newest type. Beds, bedding, and clothing for the sick are excellent in quality.

*Dietary.*—There are three grades of sick ration issued—for the very sick, special diets; for those not so ill, a soup or stew, like heavy broth, containing meat with rice and vegetables; for convalescents, strong supporting diet of roast or baked meats with potatoes, onions, etc. There is an issue of claret for medium sick and convalescents equivalent to half a pint of Burgundy or of heavy Bordeaux twice daily; for the very ill spirits may be obtained, but only on doctor's order.

Notes.—It seems to be the policy in the management of these permanent military hospitals to divorce the medical officer from all property responsibility and confine his duties entirely to the medical and surgical care of his cases; in other words, the medical officer is a doctor or a surgeon, the superintendent having all other responsibilities.

There is no such thing as a sick call in the German army. If an enlisted man falls ill or seems to be unfit for duty it is reported to the first sergeant of his company; if on inspection the first sergeant finds the man to be in need of medical care, if the case be in the barracks, he is retained in quarters until the medical officer makes his daily round, morning or afternoon; if in the field, he is picked up by the lazareths helfer and taken to the field hospital. The record is kept by the first sergeant, and the man continues to be borne on the company's strength, but as off duty. When he is returned he is simply marked for duty on the company's books; the time that he has been away is stated as "in hospital."

*Field service.*—Transportation of sick. The sick or wounded are carried from the firing line, where they receive their first dressing, to the "Hauptverbandplatz" by a corps of litter bearers; from there to the field hospital by ambulance, requisitioned wagons, or whatever transportation can be got. From the field hospital they are immediately forwarded to the base hospital by railway.

Note.—As all field hospitals are regarded accurately as field hospitals and never as permanent hospitals, every case that can be moved by any possibility is sent to the rear or to a base hospital within six hours, the field hospital being regarded as an entirely mobile unit. When the line in action advances the field hospital must advance with it; consequently it is regarded only as a resting place in which better dressings can be applied and only simple operations, which are immediately necessary, performed.

The German ambulance somewhat resembles our Greenleaf model, being slightly heavier, and carries four inside, two outside, beside driver, so arranged as to receive the field stretchers, which are all of one model and all the same size. Four of these stretchers, each bearing a wounded man, can be pushed into the after end of the ambulance, two on the bottom and two on steel tracks above.

Note.—Ambulance built with a perch so as to permit four wheels to turn almost at right angles.

*Litters.*—Wooden frame, iron ends to keep the two wooden poles rigidly apart, canvas slung between; these are light, strong, and not destructible, so arranged that if necessary the patient can be taken directly from the field upon the litters. It forms a bed for him in the hospital and, if desired, also a berth for him in the train for wounded.

*Field hospitals.*—Tentage is small in amount, requisition to quarters in the nearest village being always used. The Germans have a saying that "their worst quarters are better than the best bivouac," so they never use canvas when they can get the tight roof of a house. Their canvas is linen, heavier than ours, wall tent in shape, and about the size of ours. Each hospital tent is provided with a double fly; also with poles to every second seam at the side. These are all very strongly guyed to large pegs or stakes that are shod with iron, and have an iron band at the top to keep them from spreading. There are no cots with field-hospital equipment. The cases are cared for on canvas stretchers or straw. Blankets, nightshirts, etc., are furnished. Commodes, tables, washstands, pans, spit cups, etc., are generally of metal, a great deal of enameled ware being used. Cooking and messing arrangements are entirely in charge of the intendant, the medical officer not having this responsibility. The cooking is in kettle, and the same dietary is attempted as for the sick and very sick in general hospital.

*First aid to the wounded.*—Exactly the same as with us, the first-aid packet being almost identical. Each company has with it on the firing line the first-aid packets in the pockets of the men, these men having been previously instructed by the lazareth's helfer in methods of application. This instruction is given by a medical officer to the lazareth's helfers.

Note.—Lazareth's helfer about the equivalent of our hospital steward or sergeant.

These lazareth's helfers instruct the enlisted men, there being one with every company.

*Medical chests, panniers, and other field appliances.*—The medical chests are identical with our own. Sterilizing apparatus, bandage packages, dressings, orderly pouches, greatly resemble our own models. The "medicine wagon" which accompanies each regiment is four-wheeled, front wheels cut under to turn at right angle, two men outside, opens in the rear with two doors, contents stored in drawers and lockers.

*Contents.*—Surgical instruments enough for operation, full supply of medicines for a regiment of 3,000 men, dressings, bandages, gauze, sterilizing apparatus, a small biological laboratory for making cultures, etc., apparatus for examination of water, scales and weights for dispensing outfit; in fact, is a compact, thoroughly equipped apothecary shop and surgery.

*Disinfectants.*—These are only used in hospital, not in barracks. As there are no sinks in barracks and no plumbing of any sort connected with the sleeping quarters, no disinfectants are used, and the sinks are kept clean by scrubbing and thorough flushing with water, hired civilian scavengers doing the work. In the field, as no command is ever kept more than one day on the same ground, no disinfectant is here necessary, everything being buried and burned.

*Sanitary rules and regulations.*—All regulations regarding light, air, clothing, bedding, water, and bathing facilities originate in the staff department in Berlin, and are carried out by the captains of the companies. There is a saying of a company, "The captain is the father and the first sergeant is the mother." This will explain that the line officer looks after his men and sees to their personal cleanliness.

*Sanitary appliances.*—Water is not boiled and is not filtered, but all water before being used at any barrack is carefully analyzed by the medical officer, and when troops are to be quartered in a town the water of that town is examined before the troops are sent there. There are no disinfectant arrangements for sinks, except cleanliness and discipline; they are never in disorder. In barracks all garbage, grease, and whatever scraps may come from the ration are carefully collected in large covered barrels and sold, the purchaser removing the same twice a day. In the field all refuse about a bivouac is carefully collected and burned.

*Foot inspection.*—The feet of the army are most carefully considered, each man's feet being inspected by one of his company officers, a medical officer, and the lazareth helfer at least twice a week in barracks, and oftener in active field maneuvers. The method of making this inspection is to form the companies in squads, standing upon tables or benches sufficiently high to bring the feet directly under the eye of the inspecting officer, and to bring under his observation any wincing or flinching when the inspected man jumps to the ground barefooted. The inspecting officer passes down the line carefully examining the front of the feet and legs which are bared to the knees, searching for strained tendons, blisters, improperly cut nails, or untrimmed corns.

Having passed down the line, the men are about faced and the tendo-achilles carefully examined, and as they raise one foot and then the other the soles are inspected. As a man passes from the table or bench he leaps to the ground and runs to his shoes and stockings. This is to show any bruised soles or periostitis of the tarsus. Any case of blisters, improperly cut nails, or teno-synovitis are at once cared for by the lazereth helfer. More serious disorders are sent to quarters or hospital.

At the same time each man's socks or fusslappen and boots are carefully inspected as to the condition of cleanliness. As the infantry regiments average in marching a kilometer in ten minutes, being often pressed to a kilometer in from seven and a half to eight minutes, each man carrying 60 pounds, this care of feet is most necessary. When tables or benches are not available, the trunk of a fallen tree or a block of stone are made use of.

*Body inspection.*—The entire body of every man is inspected every thirty days by a company officer and a medical officer, careful search being made for any heart lesions, hernia, venereal disorders, skin diseases, eczemas, etc. This is in order that any physical defect may be carefully noted, cared for, and reported that might be concealed by clothing or the improper modesty or willfulness of the enlisted man.

*Bivouac.*—In bivouac the arrangement differs materially from our own. The German soldier and officer being provided only with a shelter tent, each man carries his own cover. The formation is by companies, by regiments, by brigades, much as our own. Ground is never occupied by troops more than twenty-four consecutive hours, fresh ground or bivouac always being found. Usually two men arrange to tent together. This being done, the one with the spade digs a trench 7 feet long by 4 feet wide, 6 inches to a foot deep. As ground for bivouac is always selected on the gentle slope of the hill, the foot of these "grabungs" is usually at the surface while the head is considerably deeper.

The shelter tent is erected and spread out over the earth thrown upon each side and at the head, while the "grabungs" are filled in with straw, requisitioned from the nearest stack, one bundle being allowed to each man. The reason for this ditching and walling of the side of the tent is to keep out rain, water, and the cold wind. In fine weather or summer the shelter tent is never erected, the men sleeping upon it and their overcoats. Officers to the rank of colonel are tented in the same way as the men, there being no discrimination made. Colonels of regiments and general officers have, however, a fly about the size of our three-seam wall canvas. The officers' mess is prepared by their servants, with approximate simplicity to that of the men.

> NOTES.—I must call attention to the new bakery wagon that was tried this year for the first time in active field maneuvers of the German army. It is a wagon with 4 wheels, 10 feet long, drawn by 4 horses. The body consists of a furnace arranged for a wood fire, over which is a corrugated sheet-iron oven, the heat from which is prevented from radiating by a packing between the two skins. This is so efficient that the outside of the oven will bear the touching of the hand without burning. In front is arranged a tank for the heating of water, used in the mixing of dough, which mixing is done in a following wagon, where the loaves are shaped, placed upon boards, and prepared for the oven. The capacity of these ovens is eighty loaves baked ready for issue every hour and a half, at a speed upon the chausee of a kilometer in ten minutes.
>
> The general effect of one of these wagons is that of an oval iron tank resting upon its short diameter, a smokestack at the forward upper end, a water tank in front, with stopcocks for drawing, fire box and doors at after end below, and doors for oven above. For fuller description, with drawing, I would respectfully call attention to the report of Major Allen, military attaché in Berlin. This mobile bread bakery has been tried with great success, and upon good roads in not too difficult country appears to give most excellent results. The old fixed oven buried in sand had a capacity of one hundred loaves every hour and a half, but the necessity for transportation from the fixed oven to troops moving renders the oven upon wheels a matter much in discussion.
>
> I would respectfully call attention to the accompanying photographs of the new wheeled stretcher made of bent wood and for service with possibly one bearer. This was shown in the tempelhoferfeld on July 28, and met with approving comment from the surgeon-general and other medical officers of the German army. It is extremely light, and being made of wood, steamed and bent, it is less liable to damage than stretchers made of several pieces.
>
> One bearer is able to transport with this machine over good ground as much as two bearers with the former modern stretcher.

I have been greatly aided in my work of studying and reporting upon the medico-military conditions of the German army in active field maneuvers by the able and courteous assistance of Major Allen, our military attaché in Berlin; also by the executive ability of Mr. Jackson, our chargé d'affaires at the court of the German Empire.

Very respectfully,

JOHN MCG. WOODBURY, A. M., M. D., M. R. C. S.,
*United States Commissioner, late Major and Chief Surgeon, U. S. V.*

Hon. SECRETARY OF STATE OF THE UNITED STATES.

## COMMENDATIONS.

With few exceptions the medical officers of our Army, both regulars and volunteers, have performed the responsible duties devolving upon them in a manner most creditable to themselves and to the service. During the calendar year 1900 Col. Charles H. Alden, assistant surgeon-general, was the senior assistant in my office. He had special charge of the supply division, and by virtue of his rank became acting surgeon-general when I was absent from the office. He was continuously upon duty in my office from August 31, 1893, until April 28, 1900, when he was retired for age. His services have been most valuable not only as principal assistant in the office of the Surgeon-General, but as president of the Army Medical School from the time of its organization until the course of instruction was suspended because of the emergencies resulting from the war with Spain. Lieut. Col. Charles Smart, deputy surgeon-general, who for many years has had charge of the sanitary and disbursing division of the Surgeon-General's Office, has, as usual, performed the important duties devolving upon him with intelligence and zeal. Maj. George E. Bushnell, surgeon in charge of the Hospital Corps division, has distinguished himself by his conscientious and intelligent attention to the interests of this important branch of the service.

Mr. George A. Jones, chief clerk, has continued to exhibit a degree of efficiency and attention to the responsible duties attached to his position which is, I believe, unsurpassed in the Government service. Through his efforts and those of the principal clerks in the several divisions of my office the work has been continuously kept up to date and has been conducted in a most systematic and thorough manner.

Among the medical officers of the Army occupying especially responsible positions the following are deserving of mention as having distinguished themselves for efficient and zealous performance of duty:

Col. Charles R. Greenleaf, assistant surgeon-general, for valuable services in the inspection and sanitary supervision of camps occupied by our volunteer troops at Savannah, Ga., Camp Meade, Pa., and the Presidio of San Francisco, Cal. (at present chief surgeon, Division of the Philippines).

Col. William H. Forwood, assistant surgeon-general, chief surgeon Department of California, whose responsibilities have been very great on account of the number of troops which have arrived at San Francisco en route to the Philippines and the number of sick returning from those islands.

Col. A. A. Woodhull, assistant surgeon-general, chief surgeon Division of the Philippines from April 18, 1899, to December 23, 1899.

Lieut. Col. Henry Lippincott, deputy surgeon-general, chief surgeon Division of the Philippines from June 26, 1898, to April 18, 1899.

Lieut. Col. A. C. Girard, deputy surgeon-general, in command of the United States general hospital, Presidio, San Francisco, Cal.

Lieut. Col. R. M. O'Reilly, deputy surgeon-general, chief surgeon Division of Cuba from January 25, 1899, to November 12, 1899.

Maj. Valery Havard, surgeon, chief surgeon, Department of Santiago, Cuba, from August 17, 1898, to April 18, 1900. (At present chief surgeon, Division of Cuba.)

Maj. John Van R Hoff, surgeon, chief surgeon Department of Porto Rico.

A mention of all of the medical officers whose services are worthy of commendation would include the names of nearly all of those belonging to the regular establishment and a considerable proportion of those serving under volunteer commissions. Nor can I omit in this connection the acting assistant surgeons, who, as a rule, are young men well equipped for the professional work they are called upon to perform, and many of whom have distinguished themselves by the zeal and intelligence with which they have performed their duties under the most trying conditions of active field service in the Philippines.

## STATISTICAL TABLES.

The following tables give in detail the statistical data on which the statements of this report are based:

I. Numerical view of the effects of disease and injury on the armies, regular and volunteer, during the calendar year 1898, as compared with the corresponding data for the Regular Army in 1897, and during the decade 1887-1896.

II. Numerical view of the effects of disease and injury on the Regular Army during the calendar year 1899, as compared with the corresponding data of the Regular Army for 1898, and for the decade 1888-1897.

III. Numerical view of the effects of disease and injury on the armies, regular and volunteer, during the calendar year 1899, as compared with the corresponding data for the armies in 1898 and for the Regular Army during the decade 1888-1897.

IV. Volunteer Army, 1898.
V. Volunteer Army, 1899.
VI and VII. Regular and Volunteer armies, 1899.
Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and countries in which service was rendered.

VIII. Armies, regular and volunteer, 1898 and 1899. Admissions to sick report, discharges and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army during the decade 1888-1897.

IX. Number of white and colored applicants for enlistment examined physically during the year 1899, with the number accepted, rejected, and declined, and ratios per thousand.

X. Nativity of white and colored recruits accepted during the year, with ratios per thousand of accepted men.

XI. Causes of rejection among 70,311 candidates for enlistment examined during the year, with ratios per thousand examined.

International tables I, III, VI, and VII.

[It has not been practicable during the past year to gather the information necessary for the presentation of Tables II, IV, V, and VIII of the international series.]

TABLE I.—*Numerical view of the effects of disease and injury on the armies, regular and volunteer, during the calendar year 1898, as compared with the corresponding data for the Regular Army in 1897, and during the decade 1887–1896.*

| Total Army for the year 1898. | Cuba. | Porto Rico. | Pacific islands. | Total islands. | United States. | Total Army. | White. | Colored. |
|---|---|---|---|---|---|---|---|---|
| Mean strength | 8,345 | 5,693 | 9,907 | 23,945 | 123,261 | 147,795 | 140,395 | 7,400 |
| Total admissions to sick report | 28,486 | 14,655 | 18,843 | 61,984 | 254,265 | 317,195 | 301,226 | 15,969 |
| Per 1,000 of mean strength | 3,413.54 | 2,574.21 | 1,901.99 | 2,588.6 | 2,062.82 | 2,146.18 | 2,145.56 | 2,157.97 |
| Per 1,000 for previous year | | | | | | 1,186.61 | 1,180.84 | 1,248.61 |
| Per 1,000 for preceding decade | | | | | | 1,243.39 | 1,243.02 | 1,252.38 |
| Admissions for disease | 26,271 | 13,933 | 17,602 | 57,806 | 237,759 | 296,448 | 281,766 | 14,682 |
| Per 1,000 of mean strength | 3,148.11 | 2,447.39 | 1,776.72 | 2,414.12 | 1,928.91 | 2,005.80 | 2,006.95 | 1,984.05 |
| Per 1,000 for previous year | | | | | | 896.53 | 890.77 | 958.41 |
| Per 1,000 for preceding decade | | | | | | 986.23 | 989.27 | 964.84 |
| Admissions for injury | 2,215 | 722 | 1,241 | 4,178 | 16,506 | 20,747 | 19,460 | 1,287 |
| Per 1,000 of mean strength | 265.48 | 126.82 | 125.26 | 174.48 | 133.91 | 140.38 | 138.61 | 173.92 |
| Per 1,000 for previous year | | | | | | 290.08 | 290.07 | 290.20 |
| Per 1,000 for preceding decade | | | | | | 257.16 | 253.74 | 287.54 |
| Discharges for disability, all causes | 46 | 32 | 170 | 284 | 1,789 | 2,088 | 1,995 | 93 |
| Per 1,000 of mean strength | 5.51 | 5.62 | 17.16 | 10.36 | 14.51 | 14.13 | 14.21 | 12.57 |
| Per 1,000 for previous year | | | | | | 9.61 | 9.62 | 9.51 |
| Per 1,000 for preceding decade | | | | | | 18.32 | 18.24 | 18.62 |
| Discharges for disease | 37 | 25 | 149 | 211 | 1,402 | 1,662 | 1,590 | 72 |
| Per 1,000 of mean strength | 4.43 | 4.39 | 15.04 | 8.81 | 11.37 | 11.25 | 11.33 | 9.73 |
| Per 1,000 for previous year | | | | | | 7.60 | 7.59 | 7.70 |
| Per 1,000 for preceding decade | | | | | | 15.07 | 14.97 | 15.40 |
| Discharges for injury | 9 | 7 | 21 | 37 | 387 | 426 | 405 | 21 |
| Per 1,000 of mean strength | 1.08 | 1.23 | 2.12 | 1.55 | 3.14 | 2.88 | 2.88 | 2.84 |
| Per 1,000 for previous year | | | | | | 2.01 | 2.03 | 1.81 |
| Per 1,000 for preceding decade | | | | | | 3.25 | 3.26 | 3.22 |
| Deaths from all causes | 764 | 276 | 239 | 1,279 | 2,846 | 4,136 | 3,937 | 199 |
| Per 1,000 of mean strength | 91.55 | 48.48 | 24.12 | 53.41 | 23.09 | 27.99 | 28.05 | 26.89 |
| Per 1,000 for previous year | | | | | | 5.11 | 5.05 | 5.89 |
| Per 1,000 for preceding decade | | | | | | 6.99 | 6.76 | 8.46 |
| Deaths from disease | 567 | 262 | 208 | 1,032 | 2,649 | 3,690 | 3,529 | 161 |
| Per 1,000 of mean strength | 67.94 | 46.02 | 20.49 | 43.10 | 21.49 | 24.97 | 25.14 | 21.76 |
| Per 1,000 for previous year | | | | | | 3.14 | 3.18 | 2.72 |
| Per 1,000 for preceding decade | | | | | | 4.77 | 4.59 | 6.09 |
| Deaths from injury | 197 | 14 | 86 | 247 | 197 | 446 | 408 | 38 |
| Per 1,000 of mean strength | 23.61 | 2.46 | 3.68 | 10.31 | 1.60 | 3.02 | 2.91 | 5.13 |
| Per 1,000 for previous year | | | | | | 1.97 | 1.87 | 3.17 |
| Per 1,000 for preceding decade | | | | | | 2.22 | 2.17 | 2.37 |

TABLE II.—*Numerical view of the effects of disease and injury on the Regular Army during the calendar year 1899, as compared with the corresponding data of the Regular Army for 1898, and for the decade 1888–1897.*

| Total Regular Army for the year 1899. | Cuba. | Porto Rico. | Pacific islands. | Total islands. | United States. | Total Army. |
|---|---|---|---|---|---|---|
| **Mean strength** | 11,969 | 3,347 | 22,922 | 38,238 | 26,208 | 64,446 |
| Total admissions to sick report | 35,401 | 8,797 | 60,306 | 104,504 | 46,445 | 150,949 |
| Per 1,000 of mean strength | 2,957.73 | 2,628.33 | 2,630.92 | 2,732.99 | 1,772.17 | 2,342.26 |
| Per 1,000 for previous year | 2,631.76 | 3,350.78 | 2,070.62 | 2,603.84 | 2,043.01 | 2,146.94 |
| Per 1,000 for preceding decade |  |  |  |  | 1,130.27 | 1,130.27 |
| Admissions for disease | 32,206 | 7,875 | 56,253 | 96,334 | 40,661 | 136,995 |
| Per 1,000 of mean strength | 2,690.79 | 2,352.85 | 2,454.10 | 2,519.33 | 1,551.47 | 2,125.74 |
| Per 1,000 for previous year | 2,230.18 | 3,204.66 | 1,914.23 | 2,341.66 | 1,845.81 | 1,937.71 |
| Per 1,000 for preceding decade |  |  |  |  | 891.70 | 891.70 |
| Admissions for injury | 3,195 | 922 | 4,053 | 8,170 | 5,784 | 13,954 |
| Per 1,000 of mean strength | 266.94 | 275.48 | 176.82 | 213.66 | 220.70 | 216.52 |
| Per 1,000 for previous year | 401.57 | 146.11 | 156.39 | 262.18 | 197.20 | 209.23 |
| Per 1,000 for preceding decade |  |  |  |  | 238.57 | 238.57 |
| Number constantly noneffective | 922 | 245 | 1,978 | 3,145 | 1,573 | 4,718 |
| Per 1,000 of mean strength | 77.04 | 81.27 | 86.29 | 82.25 | 60.05 | 73.22 |
| Per 1,000 for previous year |  |  |  |  | 82.83 | 82.83 |
| Per 1,000 for preceding decade |  |  |  |  |  |  |
| Days lost on account of sickness | 336,539 | 89,263 | 722,015 | 1,147,817 | 574,389 | 1,722,206 |
| For each man of Army | 28.1 | 26.7 | 31.5 | 30 | 21.9 | 26.7 |
| For each man, previous year |  |  |  |  |  | 30.23 |
| For each man, preceding decade |  |  |  |  |  |  |
| Average days each case was treated | 9.5 | 10.1 | 12 | 10.8 | 12.4 | 11.4 |
| For previous year |  |  |  |  |  | 14.08 |
| For preceding decade |  |  |  |  |  |  |
| Discharges for disability, all causes | 305 | 72 | 456 | 833 | 934 | 1,767 |
| Per 1,000 of mean strength | 25.48 | 21.51 | 19.89 | 21.79 | 35.64 | 27.42 |
| Per 1,000 for previous year |  | 6.74 | 11.37 | 5.32 | 13 | 11.58 |
| Per 1,000 for preceding decade |  |  |  |  | 16.57 | 16.57 |
| Discharges for disease | 234 | 61 | 327 | 622 | 778 | 1,395 |
| Per 1,000 of mean strength | 19.55 | 18.22 | 14.26 | 16.26 | 29.50 | 21.65 |
| Per 1,000 for previous year |  | 4.15 | 10.68 | 4.51 | 8.05 | 7.40 |
| Per 1,000 for preceding decade |  |  |  |  | 13.47 | 13.47 |
| Discharges for injury | 71 | 11 | 129 | 211 | 161 | 372 |
| Per 1,000 of mean strength | 5.93 | 3.29 | 5.63 | 5.52 | 6.14 | 5.77 |
| Per 1,000 for previous year |  | 2.59 | .69 | .81 | 4.95 | 4.18 |
| Per 1,000 for preceding decade |  |  |  |  | 3.09 | 3.09 |
| Deaths from all causes | 234 | 38 | 713 | 985 | 217 | 1,202 |
| **Per 1,000 of mean strength** | 19.55 | 11.35 | 31.10 | 25.76 | 8.28 | 18.65 |
| **Per 1,000 for previous year** | 98.16 | 41.45 | 22.74 | 60.17 | 20.14 | 27.55 |
| **Per 1,000 for preceding decade** |  |  |  |  | 6.69 | 6.69 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Deaths from disease** | 207 | 31 | 408 | 646 | 176 | 822 |
| Per 1,000 of mean strength | 17.29 | 9.26 | 17.80 | 16.89 | 6.72 | 12.75 |
| Per 1,000 for previous year | 61.15 | 39.38 | 18.60 | 42.01 | 17.45 | 22 |
| Per 1,000 for preceding decade | | | | | 4.50 | 4.50 |
| **Deaths from injury** | 27 | 7 | 305 | 339 | 41 | 380 |
| Per 1,000 of mean strength | 2.26 | 2.09 | 13.30 | 8.87 | 1.56 | 5.90 |
| Per 1,000 for previous year | 37.01 | 2.07 | 4.13 | 18.16 | 2.69 | 5.55 |
| Per 1,000 for preceding decade | | | | | 2.19 | 2.19 |

TABLE III.—*Numerical view of the effects of disease and injury on the armies, regular and volunteer, during the calendar year 1899, as compared with the corresponding data for the armies in 1898 and for the Regular Army during the decade 1888–1897.*

| Total Army for the year 1899. | Cuba. | Porto Rico. | Pacific islands. | Total islands. | United States. | Total Army. | White. | Colored. |
|---|---|---|---|---|---|---|---|---|
| **Mean strength** | 20,051 | 3,727 | 39,280 | 63,058 | 42,192 | 105,546 | 98,635 | 6,911 |
| Total admissions to sick report | 55,135 | 9,401 | 94,096 | 158,632 | 70,778 | 229,885 | 214,578 | 15,307 |
| Per 1,000 of mean strength | 2,749.74 | 2,522.40 | 2,395.52 | 2,515.65 | 1,677.51 | 2,178.06 | 2,175.47 | 2,214.88 |
| Per 1,000 for previous year | 3,413.54 | 2,574.21 | 1,901.99 | 2,588.60 | 2,062.82 | 2,146.18 | 2,145.56 | 2,157.97 |
| Per 1,000 for preceding decade |  |  |  |  |  | 1,130.27 | 1,128.55 | 1,149.76 |
| Admissions for disease | 50,889 | 8,408 | 86,666 | 145,963 | 63,155 | 209,570 | 195,941 | 13,629 |
| Per 1,000 of mean strength | 2,537.98 | 2,255.97 | 2,206.36 | 2,314.74 | 1,496.84 | 1,985.58 | 1,986.51 | 1,972.08 |
| Per 1,000 for previous year | 3,148.11 | 2,447.39 | 1,776.72 | 2,414.12 | 1,928.91 | 2,005.80 | 2,006.95 | 1,984.05 |
| Per 1,000 for preceding decade |  |  |  |  |  | 891.70 | 892.94 | 884.42 |
| Admissions for injury | 4,246 | 993 | 7,430 | 12,669 | 7,623 | 20,315 | 18,637 | 1,678 |
| Per 1,000 of mean strength | 211.76 | 266.43 | 189.16 | 200.91 | 180.67 | 192.48 | 188.95 | 242.80 |
| Per 1,000 for previous year | 265.43 | 126.82 | 125.26 | 174.48 | 133.91 | 140.38 | 138.61 | 173.92 |
| Per 1,000 for preceding decade |  |  |  |  |  | 238.57 | 235.61 | 265.35 |
| Discharges for disability, all causes | 406 | 74 | 700 | 1,180 | 1,137 | 2,320 | 2,168 | 152 |
| Per 1,000 of mean strength | 20.25 | 19.85 | 17.82 | 18.71 | 26.95 | 21.98 | 21.98 | 21.99 |
| Per 1,000 for previous year | 5.51 | 5.62 | 17.16 | 10.36 | 14.51 | 14.18 | 14.21 | 12.57 |
| Per 1,000 for preceding decade |  |  |  |  |  | 16.57 | 16.52 | 16.40 |
| Discharges for disease | 326 | 62 | 517 | 905 | 940 | 1,848 | 1,726 | 122 |
| Per 1,000 of mean strength | 16.26 | 16.63 | 13.16 | 14.35 | 22.28 | 17.51 | 17.50 | 17.65 |
| Per 1,000 for previous year | 4.43 | 4.39 | 15.04 | 8.81 | 11.37 | 11.25 | 11.33 | 9.73 |
| Per 1,000 for preceding decade |  |  |  |  |  | 13.47 | 13.42 | 13.82 |
| Discharges for injury | 80 | 12 | 183 | 275 | 197 | 472 | 442 | 30 |
| Per 1,000 of mean strength | 3.99 | 3.22 | 4.66 | 4.36 | 4.67 | 4.47 | 4.48 | 4.34 |
| Per 1,000 for previous year | 1.08 | 1.23 | 2.12 | 1.55 | 3.14 | 2.88 | 2.88 | 2.84 |
| Per 1,000 for preceding decade |  |  |  |  |  | 3.09 | 3.10 | 3.07 |
| Deaths from all causes | 367 | 42 | 1,201 | 1,610 | 333 | 1,945 | 1,830 | 115 |
| Per 1,000 of mean strength | 18.30 | 11.27 | 30.58 | 25.53 | 7.89 | 18.43 | 18.55 | 16.64 |
| Per 1,000 for previous year | 91.55 | 48.48 | 24.12 | 53.41 | 23.09 | 27.99 | 28.05 | 26.89 |
| Per 1,000 for preceding decade |  |  |  |  |  | 6.69 | 6.47 | 7.98 |
| Deaths from disease | 328 | 34 | 601 | 963 | 277 | 1,241 | 1,169 | 72 |
| Per 1,000 of mean strength | 16.36 | 9.12 | 15.30 | 15.27 | 6.56 | 11.76 | 11.85 | 10.42 |
| Per 1,000 for previous year | 67.94 | 46.02 | 20.49 | 43.10 | 21.49 | 24.97 | 25.14 | 21.76 |
| Per 1,000 for preceding decade |  |  |  |  |  | 4.50 | 4.34 | 5.59 |
| **Deaths from injury** | 39 | 8 | 600 | 647 | 56 | 704 | 661 | 43 |
| **Per 1,000 of mean strength** | 1.94 | 2.15 | 15.28 | 10.26 | 1.33 | 6.67 | 6.70 | 6.22 |
| **Per 1,000 for previous year** | 23.61 | 2.46 | 3.63 | 10.31 | 1.60 | 3.02 | 2.91 | 5.18 |
| **Per 1,000 for preceding decade** |  |  |  |  |  | 2.19 | 2.18 | 2.39 |

TABLE IV.—*Volunteer Army, 1898.—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and countries in which service was rendered.*

| | Cavalry. | | | | | | Artillery. | | | | | | Infantry. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 2,750. | | | | | | 2,573. | | | | | | 98,744. | | | | | |
| | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| Causes of admission to sick report. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 1 | 0.36 | | | | | 1 | 0.39 | | | 1 | 0.39 | 33 | 0.35 | | | 3 | 0.08 |
| Measles | 106 | 38.55 | | | 1 | 0.36 | 44 | 17.10 | | | | | 6,058 | 64.62 | 7 | 0.07 | 57 | .61 |
| Smallpox | | | | | | | 1 | .39 | | | 1 | .39 | 68 | .73 | | | 15 | .16 |
| Vaccinia | 241 | 87.63 | | | | | 158 | 61.41 | | | | | 3,501 | 37.35 | 1 | .01 | | |
| Influenza | 8 | 2.91 | | | | | 173 | 67.24 | | | | | 2,471 | 26.36 | 1 | .01 | | |
| Dengue | 15 | 5.45 | | | | | 3 | 1.17 | | | | | 175 | 1.87 | | | 2 | .02 |
| Mumps | 20 | 7.27 | | | | | 27 | 10.49 | | | | | 1,811 | 19.32 | 2 | .02 | | |
| Diphtheria | | | | | | | | | | | | | 42 | .45 | | | 1 | .01 |
| Typhoid fever | 538 | 195.63 | 1 | 0.36 | 53 | 19.27 | 162 | 62.96 | | | 18 | 7 | 15,794 | 168.48 | 23 | .23 | 1,645 | 17.55 |
| Yellow fever | 27 | 9.82 | | | 2 | .73 | | | | | | | 532 | 5.67 | | | 71 | .76 |
| Cerebro-spinal fever | 6 | 2.18 | | | 3 | 1.09 | 1 | .39 | | | | | 99 | 1.06 | 3 | .03 | 62 | .66 |
| Malarial fever, intermittent | 1,231 | 447.64 | | | | | 569 | 221.14 | | | | | 36,890 | 393.50 | 1 | .01 | | |
| Malarial fever, remittent | 447 | 162.55 | 6 | 2.18 | 3 | 1.07 | 101 | 39.26 | | | 1 | .39 | 16,404 | 174.98 | 16 | .17 | 69 | .74 |
| Malarial fever, pernicious | | | | | | | 1 | .39 | | | 1 | .39 | 201 | 2.14 | 5 | .05 | 103 | 1.10 |
| Malarial cachexia | 41 | 14.91 | 1 | .36 | | | 5 | 1.94 | | | | | 1,060 | 11.31 | 17 | .18 | 16 | .17 |
| Fever, undetermined | 188 | 68.36 | | | | | 25 | 9.72 | | | | | 2,721 | 29.02 | | | 1 | .01 |
| Erysipelas | | | | | | | 2 | .78 | | | | | 58 | .62 | | | | |
| Septicæmia and tetanus | | | | | | | | | | | | | 18 | .19 | | | 14 | .15 |
| Rheumatic fever | 4 | 1.45 | | | | | 6 | 2.33 | | | | | 328 | 3.50 | 8 | .09 | | |
| Consumption | 17 | 6.18 | 9 | 3.27 | 1 | .36 | 5 | 1.94 | 2 | .78 | | | 389 | 4.15 | 107 | 1.14 | 23 | .25 |
| Cancer | | | | | | | | | | | | | 13 | .14 | 1 | .01 | 2 | .02 |
| Syphilis and results | 32 | 11.64 | 5 | 1.82 | | | 35 | 13.60 | 2 | .78 | | | 972 | 10.37 | 90 | .96 | 1 | .01 |
| Gonorrhea and results | 209 | 76.01 | | | | | 216 | 83.95 | 1 | .39 | | | 4,768 | 50.86 | 44 | .47 | 1 | .01 |
| Chancroid and results | 41 | 14.91 | | | | | 42 | 16.32 | | | | | 1,978 | 21.10 | 10 | .11 | | |
| Infections, others | 2 | .73 | | | | | 1 | .39 | | | | | 335 | 3.57 | 4 | .04 | | |
| Total infectious diseases | 3,174 | 1,154.18 | 22 | 7.99 | 63 | 22.88 | 1,578 | 613.30 | 5 | 1.95 | 22 | 8.56 | 96,719 | 1,031.74 | 340 | 3.60 | 2,086 | 22.26 |
| Anæmia | 9 | 3.27 | 1 | .36 | | | 8 | 3.11 | | | | | 324 | 3.46 | 3 | .03 | | |
| Nutrition, others | 13 | 4.73 | 6 | 2.18 | | | 5 | 1.94 | | | | | 489 | 5.22 | 14 | .15 | 3 | .03 |
| Total diseases of nutrition | 22 | 8 | 7 | 2.54 | | | 13 | 5.05 | | | | | 813 | 8.68 | 17 | .18 | 3 | .03 |
| Alcoholism | 3 | 1.09 | | | | | 20 | 7.77 | | | | | 516 | 5.40 | 25 | .27 | 14 | .15 |
| Brain and spinal cord | 14 | 5.09 | 3 | 1.09 | | | 18 | 7 | 1 | .39 | | | 537 | 5.73 | 66 | .70 | 29 | .31 |

TABLE IV.—*Volunteer Army, 1898.—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and countries in which service was rendered*—Continued.

| | Cavalry. | | | | | | Artillery. | | | | | | Infantry. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 2,750. | | | | | | 2,573. | | | | | | 93,744. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Insanity | 3 | 1.09 | 3 | 1.09 | | | 2 | 0.78 | 2 | 0.78 | | | 94 | 1 | 49 | 0.52 | 2 | 0.02 |
| Meningitis | | | | | | | 1 | .39 | | | 1 | .39 | 53 | .57 | | | 24 | .26 |
| Poisoning, narcotic | | | | | | | 3 | 1.17 | 2 | .78 | | | 45 | .48 | 5 | .05 | 3 | .03 |
| Nervous system, others | 108 | 39.27 | 1 | .36 | | | 60 | 23.32 | 3 | 1.17 | | | 2,324 | 24.79 | 30 | .32 | 2 | .02 |
| Total diseases of the nervous system | 128 | 46.54 | 7 | 2.54 | | | 104 | 40.43 | 8 | 3.12 | 1 | .39 | 3,569 | 37.97 | 175 | 1.86 | 74 | .79 |
| Poisoning, irritant | 14 | 5.09 | | | 1 | .36 | 7 | 2.72 | | | | | 223 | 2.38 | 1 | .01 | 8 | .09 |
| Tonsillitis, pharyngitis, and sore throat | 51 | 18.55 | | | | | 90 | 34.98 | | | | | 2,838 | 30.27 | 1 | .01 | 1 | .01 |
| Peritonitis | 1 | .36 | | | 1 | .36 | 1 | .39 | | | | | 70 | .75 | | | 21 | .22 |
| Dyspepsia, colic, and constipation | 379 | 137.82 | | | | | 214 | 83.17 | | | | | 8,571 | 91.43 | 21 | .22 | 3 | .03 |
| Gastritis | 111 | 40.36 | | | 1 | .36 | 39 | 15.16 | 1 | .39 | | | 2,049 | 21.86 | 7 | .07 | 3 | .03 |
| Diarrheal diseases | 2,341 | 851.27 | 5 | 1.82 | 2 | .73 | 1,185 | 460.55 | 2 | .78 | | | 38,820 | 414.10 | 46 | .49 | 111 | 1.18 |
| Enteritis | 109 | 39.63 | | | | | 43 | 16.71 | | | | | 2,397 | 25.57 | 4 | .04 | 16 | .17 |
| Perityphlitis and appendicitis | 8 | 2.91 | | | 2 | .73 | 6 | 2.33 | 1 | .39 | | | 236 | 2.52 | 9 | .10 | 20 | .21 |
| Digestive system, others | 155 | 56.37 | 4 | 1.45 | 1 | .36 | 121 | 47.03 | 6 | 2.33 | | | 4,539 | 48.42 | 37 | .39 | 14 | .15 |
| Total diseases of the digestive system | 3,169 | 1,152.36 | 9 | 3.27 | 8 | 2.90 | 1,706 | 663.04 | 10 | 3.89 | | | 59,743 | 637.30 | 126 | 1.33 | 197 | 2.09 |
| Heart, diseases of | 20 | 7.27 | 7 | 2.55 | 1 | .36 | 10 | 3.89 | 4 | 1.55 | | | 312 | 3.33 | 60 | .64 | 12 | .13 |
| Arteries and veins | 6 | 2.18 | 2 | .73 | | | 7 | 2.72 | | | | | 162 | 1.73 | 20 | .21 | | |
| Total diseases of the circulatory system | 26 | 9.45 | 9 | 3.28 | 1 | .36 | 17 | 6.61 | 4 | 1.55 | | | 474 | 5.06 | 80 | .85 | .12 | .13 |
| Bronchitis | 162 | 58.91 | 5 | 1.82 | | | 215 | 83.56 | | | | | 7,405 | 78.99 | 82 | .34 | 1 | .01 |
| Pneumonia | 16 | 5.82 | 1 | .36 | 1 | .36 | 16 | 6.22 | | | 1 | .39 | 749 | 7.99 | 9 | .10 | 93 | .99 |
| Pleurisy | 20 | 7.27 | | | | | 18 | 7 | | | | | 363 | 3.87 | 3 | .03 | 5 | .05 |
| Respiratory system, others | 73 | 26.55 | 2 | .73 | | | 146 | 56.75 | 2 | .78 | | | 4,074 | 43.46 | 16 | .17 | 3 | .03 |
| Total diseases of the respiratory organs | 271 | 98.55 | 8 | 2.91 | 1 | .36 | 395 | 153.53 | 2 | .78 | 1 | .39 | 12,591 | 134.31 | 60 | .64 | 102 | 1.08 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidneys, diseases of | 19 | 6.91 | .... | ...... | 1 | .36 | 11 | 4.28 | .... | ...... | .... | ...... | 193 | 2.06 | 16 | .17 | 11 | .12 |
| Varicocele | 18 | 6.54 | 4 | 1.45 | .... | ...... | 2 | .78 | .... | ...... | .... | ...... | 235 | 2.51 | 16 | .17 | .... | ...... |
| Genito-urinary, others | 32 | 11.64 | 2 | .73 | .... | ...... | 31 | 12.05 | 1 | .39 | .... | ...... | 873 | 9.31 | 16 | .17 | 2 | .02 |
| Total diseases of the genito-urinary system | 69 | 25.09 | 6 | 2.18 | 1 | .36 | 44 | 17.11 | 1 | .39 | .... | ...... | 1,301 | 13.88 | 48 | .51 | 13 | .14 |
| Adenitis | 14 | 5.09 | 1 | .36 | .... | ...... | 18 | 7 | 1 | .39 | .... | ...... | 313 | 3.34 | 3 | .03 | .... | ...... |
| Lymphatic system, others | 2 | .73 | .... | ...... | .... | ...... | 3 | 1.17 | .... | ...... | .... | ...... | 89 | .95 | 2 | .02 | .... | ...... |
| Total diseases of the lymphatic system | 16 | 5.82 | 1 | .36 | .... | ...... | 21 | 8.17 | 1 | .39 | .... | ...... | 402 | 4.29 | 5 | .05 | .... | ...... |
| Rheumatism, muscular | 150 | 54.55 | 2 | .73 | .... | ...... | 173 | 67.24 | 4 | 1.55 | .... | ...... | 4,957 | 52.87 | 57 | .61 | .... | ...... |
| Osteitis and periostitis | 3 | 1.09 | .... | ...... | .... | ...... | 7 | 2.72 | .... | ...... | .... | ...... | 105 | 1.12 | 3 | .03 | .... | ...... |
| Arthritis and synovitis | 14 | 5.09 | .... | ...... | .... | ...... | 22 | 8.55 | 1 | .39 | .... | ...... | 536 | 5.72 | 17 | .18 | .... | ...... |
| Rheumatism, chronic articular | 11 | 4 | 1 | .36 | .... | ...... | 12 | 4.66 | 2 | .78 | .... | ...... | 517 | 5.51 | 43 | .46 | 1 | .01 |
| Muscles, bones, and joints, others | 5 | 1.82 | 1 | .36 | .... | ...... | 8 | 3.11 | 2 | .78 | .... | ...... | 166 | 1.77 | 28 | .30 | .... | ...... |
| Total diseases of the muscles, bones, and joints | 183 | 66.55 | 4 | 1.45 | .... | ...... | 222 | 86.28 | 9 | 3.50 | .... | ...... | 6,281 | 66.99 | 148 | 1.58 | 1 | .01 |
| Total diseases of the integumentary system, all | 251 | 91.28 | 1 | .36 | .... | ...... | 204 | 79.28 | .... | ...... | .... | ...... | 4,153 | 44.30 | 17 | .18 | 3 | .03 |
| Total diseases of the eye | 46 | 16.73 | 1 | .36 | .... | ...... | 27 | 10.49 | .... | ...... | .... | ...... | 852 | 9.09 | 30 | .32 | .... | ...... |
| Total diseases of the ear | 16 | 5.82 | .... | ...... | .... | ...... | 39 | 15.16 | 1 | .39 | .... | ...... | 667 | 7.11 | 28 | .30 | 2 | .02 |
| Total diseases of the nose | .... | ...... | .... | ...... | .... | ...... | .... | ...... | 2 | .78 | .... | ...... | 51 | .54 | 3 | .03 | .... | ...... |
| Total unclassified | 48 | 17.45 | .... | ...... | 1 | .36 | 86 | 33.43 | .... | ...... | 1 | .39 | 2,094 | 22.34 | 53 | .57 | 36 | .38 |
| Total for diseases | 7,419 | 2,697.82 | 75 | 27.28 | 75 | 27.28 | 4,456 | 1,731.88 | 43 | 16.71 | 25 | 9.72 | 189,710 | 2,023.70 | 1,130 | 12.05 | 25.29 | 26.98 |
| Drowning | .... | ...... | .... | ...... | .... | ...... | 1 | .39 | .... | ...... | .... | ...... | ...... | ...... | .... | ...... | 13 | .14 |
| Exhaustion from exposure and fatigue | 41 | 14.91 | .... | ...... | .... | ...... | 21 | 8.16 | .... | ...... | .... | ...... | 1,018 | 10.86 | 8 | .09 | 3 | .03 |
| Heat stroke | 10 | 3.64 | .... | ...... | .... | ...... | 2 | .78 | .... | ...... | .... | ...... | 273 | 2.91 | 9 | .10 | 1 | .01 |
| Lightning | .... | ...... | .... | ...... | .... | ...... | .... | ...... | .... | ...... | .... | ...... | 22 | .23 | .... | ...... | 2 | .02 |
| Venomous bites, stings, and wounds | 13 | 4.73 | .... | ...... | .... | ...... | 28 | 10.88 | .... | ...... | .... | ...... | 266 | 2.84 | 1 | .01 | .... | ...... |
| Abrasions, blisters, burns, and scalds | 28 | 10.18 | .... | ...... | .... | ...... | 46 | 17.88 | .... | ...... | .... | ...... | 1,067 | 11.38 | 1 | .01 | .... | ...... |
| Compression and concussion of brain | 5 | 1.82 | .... | ...... | 1 | .36 | 2 | .78 | .... | ...... | .... | ...... | 50 | .53 | 2 | .02 | 1 | .01 |
| Contusions and sprains | 343 | 124.73 | 9 | 3.27 | .... | ...... | 297 | 115.43 | .... | ...... | .... | ...... | 2,889 | 30.82 | 12 | .13 | .... | ...... |
| Dislocations | 10 | 3.64 | 2 | .73 | 1 | .36 | 5 | 1.94 | .... | ...... | .... | ...... | 154 | 1.64 | 7 | .07 | .... | ...... |
| Fractures (not shot) | 44 | 16 | 3 | 1.09 | 3 | 1.09 | 27 | 10.49 | 1 | .39 | .... | ...... | 419 | 4.47 | 10 | .11 | 10 | .11 |
| Herniæ | 26 | 9.45 | 9 | 3.27 | .... | ...... | 22 | 8.55 | 6 | 2.33 | .... | ...... | 709 | 7.56 | 94 | 1 | .... | ...... |
| Wounds, contused, lacerated, and punctured | 98 | 35.64 | .... | ...... | 1 | .36 | 64 | 24.87 | .... | ...... | .... | ...... | 913 | 9.74 | 4 | .04 | .... | ...... |
| Wounds, incised | 29 | 10.55 | .... | ...... | 1 | .36 | 30 | 11.66 | .... | ...... | .... | ...... | 611 | 6.52 | 1 | .01 | 6 | .06 |
| Wounds, gunshot | 118 | 42.91 | .... | ...... | 24 | 8.73 | 20 | 7.77 | .... | ...... | 3 | 1.17 | 459 | 4.90 | 18 | .19 | 91 | .97 |
| Secondary results of injury | 6 | 2.18 | 1 | .36 | .... | ...... | 3 | 1.17 | 1 | .39 | .... | ...... | 69 | .74 | 15 | .16 | 2 | .02 |
| Other injuries | 28 | 10.18 | 2 | .73 | 3 | 1.09 | 24 | 9.33 | .... | ...... | .... | ...... | 381 | 4.06 | 9 | .10 | 17 | .18 |
| Total for injuries | 799 | 290.55 | 26 | 9.45 | 34 | 12.36 | 592 | 230.08 | 8 | 3.11 | 3 | 1.17 | 9,300 | 99.20 | 191 | 2.04 | 146 | 1.56 |
| Total for diseases and injuries | 8,218 | 2,988.36 | 101 | 36.73 | 109 | 39.64 | 5,048 | 1,961.91 | 51 | 19.82 | 28 | 10.88 | 199,010 | 2,122.91 | 1,321 | 14.09 | 2,675 | 28.54 |

TABLE IV.—*Volunteer Army, 1898.—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and countries in which service was rendered*—Continued.

| | Engineers. | | | | | | Signal Corps. | | | | | | Army. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 1,504. | | | | | | 589. | | | | | | 101,160. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | | | | | | | | | | | | | 35 | 0.35 | | | 4 | 0.04 |
| Measles | 6 | 3.99 | | | | | 3 | 5.09 | | | | | 6,217 | 61.46 | 7 | 0.07 | 58 | .57 |
| Smallpox | | | | | | | 4 | 6.79 | | | | | 73 | .72 | | | 16 | .16 |
| Vaccinia | 319 | 212.10 | | | | | 15 | 25.47 | | | | | 4,234 | 41.85 | 1 | .01 | | |
| Influenza | 77 | 51.20 | | | | | 3 | 5.09 | | | | | 2,732 | 27.01 | 1 | .01 | | |
| Dengue | 20 | 13.30 | | | | | | | | | | | 213 | 2.11 | | | 2 | .02 |
| Mumps | 5 | 3.32 | | | | | | | | | | | 1,863 | 18.42 | 2 | .02 | | |
| Diphtheria | | | | | | | | | | | | | 42 | .42 | | | 1 | .01 |
| Typhoid fever | 224 | 148.94 | | | 17 | 11.30 | 78 | 132.43 | 1 | 1.70 | 5 | 8.49 | 16,796 | 166.03 | 25 | .25 | 1,738 | 17.18 |
| Yellow fever | | | | | | | 6 | 10.19 | | | 1 | 1.70 | 565 | 5.58 | | | 74 | .73 |
| Cerebro-spinal fever | | | | | | | 2 | 3.40 | | | | | 108 | 1.07 | 3 | .03 | 65 | .64 |
| Malarial fever, intermittent | 462 | 307.18 | | | | | 158 | 268.25 | | | | | 39,310 | 388.59 | 1 | .01 | | |
| Malarial fever, remittent | 330 | 219.42 | | | 1 | .66 | 100 | 169.78 | | | | | 17,382 | 171.82 | 22 | .22 | 74 | .73 |
| Malarial fever, pernicious | 3 | 1.99 | | | 1 | .66 | 14 | 23.77 | | | 3 | 5.09 | 219 | 2.16 | 5 | .05 | 108 | 1.07 |
| Malarial cachexia | 2 | 1.33 | | | | | 4 | 6.79 | 1 | 1.70 | | | 1,112 | 10.99 | 19 | .19 | 16 | .16 |
| Fever, undetermined | 75 | 49.87 | | | | | 2 | 3.40 | | | | | 3,011 | 29.76 | | | 1 | .01 |
| Erysipelas | 7 | 4.65 | | | | | | | | | | | 67 | .66 | | | | |
| Septicæmia and tetanus | | | | | | | | | | | | | 18 | .18 | | | 14 | .14 |
| Rheumatic fever | 6 | 3.99 | | | | | 1 | 1.70 | | | | | 345 | 3.41 | 8 | .08 | | |
| Consumption | 7 | 4.65 | | | | | | | | | | | 418 | 4.13 | 118 | 1.17 | 24 | .24 |
| Cancer | | | | | | | | | | | | | 13 | .13 | 1 | .01 | 2 | .02 |
| Syphilis and results | 14 | 9.31 | | | | | 4 | 6.79 | | | | | 1,057 | 10.45 | 97 | .96 | 1 | .01 |
| Gonorrhea and results | 45 | 29.92 | 1 | 0.66 | | | 19 | 32.26 | | | | | 5,257 | 51.97 | 46 | .45 | 1 | .01 |
| Chancroid and results | 15 | 9.97 | | | | | 7 | 11.88 | | | | | 2,083 | 20.59 | 10 | .10 | | |
| Infections, others | | | | | | | | | | | | | 338 | 3.34 | 4 | .04 | | |
| Total infectious diseases | 1,617 | 1,075.13 | 1 | .66 | 19 | 12.62 | 420 | 713.08 | 2 | 3.40 | 9 | 15.28 | 103,508 | 1,023.20 | 370 | 3.67 | 2,199 | 21.74 |
| Anæmia | 10 | 6.65 | | | | | 9 | 15.28 | | | | | 360 | 3.56 | 4 | .04 | | |
| Nutrition, others | 11 | 7.31 | | | | | 1 | 1.70 | | | | | 519 | 5.13 | 20 | .20 | 3 | .03 |
| Total diseases of nutrition | 21 | 13.96 | | | | | 10 | 16.98 | | | | | 879 | 8.69 | 24 | .24 | 3 | .03 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alcoholism | 25 | 16.62 | | | | | 8 | 13.58 | | | | | 572 | 5.65 | 25 | .25 | 14 | .14 |
| Brain and spinal cord | 6 | 3.99 | 1 | .66 | 1 | .66 | 7 | 11.88 | 1 | 1.70 | | | 582 | 5.75 | 72 | .71 | 30 | .30 |
| Insanity | 4 | 2.66 | 1 | .66 | | | | | | | | | 103 | 1.02 | 55 | .54 | 2 | .02 |
| Meningitis | | | | | | | | | | | | | 54 | .53 | | | 25 | .25 |
| Poisoning, narcotic | | | | | | | | | | | | | 48 | .47 | 7 | .07 | 3 | .03 |
| Nervous system, others | 52 | 34.58 | | | | | 7 | 11.88 | | | | | 2,551 | 25.22 | 34 | .34 | 2 | .02 |
| Total diseases of the nervous system | 87 | 57.85 | 2 | 1.32 | 1 | .66 | 22 | 37.34 | 1 | 1.70 | | | 3,910 | 38.64 | 193 | 1.91 | 76 | .76 |
| Poisoning, irritant | | | | | | | 13 | 22.07 | | | | | 244 | 2.41 | 1 | .01 | 9 | .09 |
| Tonsillitis, pharyngitis, and sore throat | 22 | 14.63 | 1 | .66 | | | | | | | | | 3,014 | 29.79 | 2 | .02 | 1 | .01 |
| Peritonitis | 26 | 17.29 | | | | | | | | | | | 98 | .97 | | | 22 | .22 |
| Dyspepsia, colic, and constipation | 193 | 128.32 | 2 | 1.33 | | | 53 | 89.98 | | | | | 9,410 | 93.02 | 23 | .23 | 3 | .03 |
| Gastritis | 44 | 29.26 | 1 | .66 | | | 7 | 11.88 | | | | | 2,250 | 22.24 | 9 | .09 | 4 | .04 |
| Diarrheal diseases | 733 | 487.37 | 1 | .66 | 1 | .66 | 191 | 324.28 | | | | | 43,270 | 427.74 | 54 | .53 | 114 | 1.13 |
| Enteritis | 7 | 4.65 | | | | | 10 | 16.98 | | | | | 2,566 | 25.36 | 4 | .04 | 16 | .16 |
| Perityphlitis and appendicitis | 5 | 3.32 | | | | | 1 | 1.70 | | | | | 256 | 2.53 | 10 | .10 | 22 | .22 |
| Digestive system, others | 198 | 131.65 | | | 1 | .66 | 23 | 39.05 | | | | | 5,036 | 49.78 | 47 | .46 | 16 | .16 |
| Total diseases of the digestive system | 1,228 | 816.49 | 5 | 3.31 | 2 | 1.32 | 298 | 505.94 | | | | | 66,144 | 653.84 | 150 | 1.48 | 207 | 2.06 |
| Heart, disease of | 9 | 5.98 | 1 | .66 | | | 5 | 8.49 | 2 | 3.40 | | | 356 | 3.52 | 74 | .73 | 13 | .13 |
| Arteries and veins | 7 | 4.65 | 1 | .66 | | | 1 | 1.70 | | | | | 183 | 1.81 | 23 | .23 | | |
| Total diseases of the circulatory system | 16 | 10.63 | 2 | 1.32 | | | 6 | 10.19 | 2 | 8.40 | | | 539 | 5.33 | 97 | .96 | 13 | .13 |
| Bronchitis | 133 | 88.44 | | | | | 20 | 33.96 | | | | | 7,935 | 78.44 | 37 | .37 | 1 | .01 |
| Pneumonia | 13 | 8.64 | | | 2 | 1.33 | | | | | | | 794 | 7.85 | 10 | .10 | 97 | .96 |
| Pleurisy | 4 | 2.66 | 1 | .66 | 1 | .66 | 5 | 8.49 | | | | | 410 | 4.05 | 4 | .04 | 6 | .06 |
| Respiratory system, others | 97 | 64.50 | | | | | 29 | 49.23 | | | | | 4,419 | 43.68 | 20 | .20 | 3 | .03 |
| Total diseases of the respiratory organs | 247 | 164.24 | 1 | .66 | 3 | 1.99 | 54 | 91.68 | | | | | 13,558 | 134.02 | 71 | .71 | 107 | 1.06 |
| Kidneys, diseases of | 4 | 2.66 | | | 1 | .66 | | | | | | | 227 | 2.24 | 16 | .16 | 13 | .13 |
| Varicocele | 9 | 5.98 | | | | | | | | | | | 264 | 2.61 | 20 | .20 | | |
| Genito-urinary, others | 17 | 11.30 | | | | | 5 | 8.49 | | | | | 958 | 9.47 | 19 | .19 | 2 | .02 |
| Total diseases of the genito-urinary system | 30 | 19.94 | | | 1 | .66 | 5 | 8.49 | | | | | 1,449 | 14.32 | 55 | .55 | 15 | .15 |
| Adenitis | | | | | | | 4 | 6.79 | | | | | 349 | 3.45 | 5 | .05 | | |
| Lymphatic system, others | 9 | 5.98 | | | | | 1 | 1.70 | | | | | 104 | 1.03 | 2 | .02 | | |
| Total diseases of the lymphatic system | 9 | 5.98 | | | | | 5 | 8.49 | | | | | 453 | 4.48 | 7 | .07 | | |
| Rheumatism, muscular | 192 | 127.66 | 1 | .66 | | | 20 | 33.96 | | | | | 5,492 | 54.29 | 64 | .63 | | |
| Osteitis and periostitis | 1 | .66 | | | | | | | | | | | 116 | 1.15 | 3 | .03 | | |
| Arthritis and synovitis | 9 | 5.98 | | | | | 5 | 8.49 | | | | | 586 | 5.79 | 18 | .18 | | |
| Rheumatism, chronic articular | 11 | 7.31 | 2 | 1.33 | | | 2 | 3.40 | 1 | 1.70 | | | 553 | 5.47 | 49 | .48 | 1 | .01 |
| Muscles, bones, and joints, others | 9 | 5.98 | 1 | .66 | | | 2 | 3.40 | | | | | 190 | 1.88 | 32 | .30 | | |
| Total diseases of the muscles, bones, and joints | 222 | 147.61 | 4 | 2.65 | | | 29 | 49.25 | 1 | 1.70 | | | 6,937 | 68.58 | 166 | 1.62 | 1 | .01 |

TABLE IV.—*Volunteer Army, 1898.—Admission to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and countries in which service was rendered*—Continued.

| | Cuba. | | | | | | Porto Rico. | | | | | | Pacific Islands. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 4,535. | | | | | | 3,763. | | | | | | 7,004. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total dieases of the integumentary system, all | 63 | 41.89 | | | | | 20 | 33.96 | | | | | 4,691 | 46.37 | 18 | 0.18 | 3 | 0.03 |
| Total diseases of the eye | 25 | 16.62 | 4 | 2.66 | | | 5 | 8.49 | 1 | 1.70 | | | 955 | 9.44 | 36 | .36 | | |
| Total diseases of the ear | 22 | 14.63 | 1 | .66 | | | | | | | | | 744 | 7.35 | 30 | .30 | 2 | .02 |
| Total diseases of the nose | 1 | .66 | | | | | 1 | 1.70 | | | | | 53 | .52 | 5 | .05 | | |
| Total unclassified | 27 | 17.95 | | | | | 8 | 13.58 | | | | | 2,263 | 22.37 | 53 | .52 | 38 | .38 |
| Total for diseases | 3,615 | 2,403.59 | 20 | 13.30 | 26 | 17.29 | 883 | 1,499.15 | 7 | 11.88 | 9 | 15.28 | 206,083 | 2,037.20 | 1,275 | 12.60 | 2,664 | 26.33 |
| Drowning | | | | | | | | | | | | | 1 | .01 | | | 13 | .13 |
| Exhaustion from exposure and fatigue | 17 | 11.30 | | | | | 5 | 8.49 | | | 1 | 1.70 | 1,102 | 10.89 | 8 | .08 | 4 | .04 |
| Heat stroke | 4 | 2.66 | | | | | 6 | 10.19 | | | | | 295 | 2.92 | 9 | .09 | 1 | .01 |
| Lightning | | | | | | | | | | | | | 22 | .22 | | | 2 | .02 |
| Venomous bites, stings, and wounds | 12 | 7.98 | | | | | | | | | | | 319 | 3.15 | 1 | .01 | | |
| Abrasions, blisters, burns, and scalds | 26 | 17.29 | | | | | 6 | 10.19 | | | | | 1,173 | 11.60 | 1 | .01 | | |
| Compression and concussion of brain | | | | | | | | | | | | | 57 | .56 | 2 | .02 | 2 | .02 |
| Contusions and sprains | 78 | 48.54 | | | | | 23 | 39.05 | | | | | 3,625 | 35.84 | 21 | .21 | | |
| Dislocations | 4 | 2.66 | | | | | 3 | 5.09 | | | | | 176 | 1.74 | 9 | .09 | 1 | .01 |
| Fractures (not shot) | 12 | 7.98 | | | | | 4 | 6.79 | 1 | 1.70 | | | 506 | 5.00 | 15 | .15 | 13 | .18 |
| Herniæ | 33 | 21.94 | 4 | 2.66 | 1 | .66 | 5 | 8.49 | 1 | 1.70 | | | 795 | 7.86 | 114 | 1.13 | 1 | .01 |
| Wounds, contused, lacerated, and punctured | 22 | 14.63 | | | | | 3 | 5.09 | | | | | 1,100 | 10.87 | 4 | .04 | 1 | .01 |
| Wounds, incised | 19 | 12.63 | | | | | 3 | 5.09 | | | | | 692 | 6.84 | 1 | .01 | 7 | .07 |
| Wounds, gunshot | 2 | 1.33 | | | | | 1 | 1.70 | | | | | 600 | 5.93 | 18 | .18 | 118 | 1.17 |
| Secondary results of injury | 1 | .66 | | | | | | | | | | | 79 | .78 | 17 | .17 | 2 | .02 |
| Other injuries | 10 | 6.65 | | | 1 | .66 | 4 | 6.79 | | | 1 | 1.70 | 447 | 4.42 | 11 | .11 | 22 | .22 |
| Total for injuries | 285 | 156.25 | 4 | 2.66 | 2 | 1.33 | 63 | 106.96 | 2 | 3.40 | 2 | 3.40 | 10,989 | 108.63 | 231 | 2.28 | 187 | 1.85 |
| Total for diseases and injuries | 3,850 | 2,559.84 | 24 | 15.96 | 28 | 18.62 | 946 | 1,606.11 | 9 | 15.28 | 11 | 18.68 | 217,072 | 2,145.83 | 1,506 | 14.89 | 2,851 | 28.18 |

TABLE IV.—*Volunteer Army, 1898.—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and countries in which service was rendered*—Continued.

| | Cuba. | | | | | | Porto Rico. | | | | | | Pacific Islands. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 4,535. | | | | | | 3,763. | | | | | | 7,004. | | | | | |
| | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| Causes of admission to sick report. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 2 | 0.44 | | | 1 | 0.22 | 1 | 0.27 | | | | | | | | | | |
| Measles | 149 | 32.86 | | | 1 | .22 | 96 | 25.51 | | | | | 226 | 32.27 | | | 2 | 0.29 |
| Smallpox | 1 | .22 | | | | | 5 | 1.33 | | | 1 | 0.27 | 59 | 8.42 | | | 15 | 2.14 |
| Vaccinia | 30 | 6.62 | | | | | 2 | .53 | | | | | 271 | 38.69 | | | | |
| Influenza | 1 | .22 | | | | | 7 | 1.86 | | | | | 70 | 9.99 | | | | |
| Dengue | 40 | 8.82 | | | 2 | .44 | 11 | 2.92 | | | | | 4 | .57 | | | | |
| Mumps | 1 | .22 | | | | | 13 | 3.45 | | | | | 340 | 48.54 | | | | |
| Diphtheria | 8 | 1.76 | | | | | | | | | | | 4 | .57 | | | | |
| Typhoid fever | 433 | 95.48 | | | 100 | 22.05 | 1,214 | 322.62 | | | 153 | 40.66 | 632 | 90.23 | 7 | 1.00 | 65 | 9.28 |
| Yellow fever | 552 | 121.72 | | | 72 | 15.88 | 2 | .53 | | | | | | | | | | |
| Cerebro-spinal fever | 9 | 1.98 | | | 9 | 1.98 | | | | | | | 3 | .43 | 1 | .14 | 1 | .14 |
| Malarial fever, intermittent | 8,954 | 1,974.42 | 1 | 0.22 | | | 1,449 | 385.06 | | | | | 1,158 | 165.33 | | | | |
| Malarial fever, remittent | 2,240 | 493.94 | | | 27 | 5.95 | 1,177 | 312.78 | 3 | 0.80 | 7 | 1.86 | 1,787 | 255.14 | 1 | .14 | 8 | 1.14 |
| Malarial fever, pernicious | 77 | 16.98 | | | 37 | 8.16 | 6 | 1.59 | | | 4 | 1.06 | 4 | .57 | | | 2 | .29 |
| Malarial cachexia | 316 | 69.68 | 1 | .22 | 3 | .66 | 10 | 2.66 | | | | | 10 | 1.43 | | | | |
| Fever, undetermined | 196 | 43.22 | | | | | 195 | 51.82 | | | | | 411 | 58.68 | | | | |
| Erysipelas | | | | | | | 2 | .53 | | | | | 5 | .71 | | | | |
| Septicæmia and tetanus | 1 | .22 | | | | | | | | | | | 3 | .43 | | | 4 | .57 |
| Rheumatic fever | 18 | 3.97 | | | 2 | .44 | 9 | 2.39 | | | | | 22 | 3.14 | 1 | .14 | | |
| Consumption | 36 | 7.94 | 4 | .88 | | | 15 | 3.99 | 4 | 1.06 | 3 | .80 | 46 | 6.57 | 12 | 1.71 | 5 | .71 |
| Cancer | 1 | .22 | | | | | | | | | | | | | | | | |
| Syphilis and results | 51 | 11.25 | 4 | .88 | | | 26 | 6.91 | 3 | .80 | | | 45 | 6.42 | | | | |
| Gonorrhea and results | 177 | 39.03 | 1 | .22 | | | 116 | 30.83 | | | | | 539 | 76.96 | | | | |
| Chancroid and results | 117 | 25.80 | 2 | .44 | | | 54 | 14.35 | | | | | 512 | 73.10 | | | | |
| Infections, others | 1 | 22 | 2 | .44 | | | 6 | 1.59 | | | | | 17 | 2.43 | | | | |
| Total infectious diseases | 13,411 | 2,957.22 | 15 | 3.30 | 254 | 56.00 | 4,416 | 1,173.52 | 10 | 2.66 | 168 | 44.65 | 6,168 | 880.62 | 22 | 3.13 | 102 | 14.56 |
| Anæmia | 7 | 1.54 | | | | | 12 | 3.19 | 1 | .27 | | | 44 | 6.28 | 1 | .14 | | |
| Nutrition, others | 246 | 54.25 | 1 | .22 | 1 | .22 | 15 | 3.99 | | | | | 4 | .57 | | | 1 | .14 |
| Total diseases of nutrition | 253 | 55.79 | 1 | .22 | 1 | .22 | 27 | 7.18 | 1 | .27 | | | 48 | 6.85 | 1 | .14 | 1 | .14 |

TABLE IV.—*Volunteer Army, 1898.—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and countries in which service was rendered*—Continued.

| | Engineers. | | | | | | Signal corps. | | | | | | Army. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 1,504. | | | | | | 589. | | | | | | 101,160. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Alcoholism | 103 | 22.71 | ..... | ..... | 4 | .88 | 11 | 2.92 | ..... | ..... | ..... | ..... | 33 | 4.71 | ..... | ..... | ..... | ..... |
| Brain and spinal cord | 18 | 3.97 | 3 | .66 | 1 | .22 | 16 | 4.25 | 1 | .27 | 6 | 1.59 | 23 | 3.28 | 8 | 1.14 | 2 | .29 |
| Insanity | 6 | 1.32 | ..... | ..... | ..... | ..... | 2 | .53 | ..... | ..... | ..... | ..... | 6 | .86 | 1 | .14 | ..... | ..... |
| Meningitis | 2 | .44 | ..... | ..... | 2 | .44 | 2 | .53 | 3 | .80 | 2 | .53 | 9 | 1.28 | ..... | ..... | 3 | .43 |
| Poisoning, narcotic | 5 | 1.10 | ..... | ..... | ..... | ..... | 8 | 2.13 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Nervous system, others | 104 | 22.93 | 1 | .22 | ..... | ..... | 46 | 12.22 | ..... | ..... | ..... | ..... | 132 | 18.85 | 4 | .57 | ..... | ..... |
| Total diseases of the nervous system | 238 | 52.47 | 4 | .88 | 7 | 1.54 | 85 | 22.58 | 4 | 1.07 | 8 | 2.12 | 203 | 28.98 | 13 | 1.85 | 5 | .72 |
| Poisoning, irritant | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | .27 | 8 | 1.14 | ..... | ..... | 1 | .14 |
| Tonsillitis, pharyngitis, and sore throat | 50 | 11.03 | ..... | ..... | ..... | ..... | 51 | 13.55 | ..... | ..... | ..... | ..... | 226 | 32.27 | ..... | ..... | ..... | ..... |
| Peritonitis | 3 | .66 | ..... | ..... | 1 | .22 | 2 | .53 | ..... | ..... | ..... | ..... | 28 | 4.00 | ..... | ..... | ..... | ..... |
| Dyspepsia, colic, and constipation | 212 | 46.75 | ..... | ..... | ..... | ..... | 104 | 27.64 | ..... | ..... | ..... | ..... | 329 | 46.97 | ..... | ..... | ..... | ..... |
| Gastritis | 60 | 13.23 | ..... | ..... | ..... | ..... | 99 | 26.31 | ..... | ..... | 1 | .27 | 149 | 21.27 | 2 | .29 | 1 | .14 |
| Diarrheal diseases | 1,599 | 352.59 | 1 | .22 | 39 | 8.60 | 2,054 | 545.84 | ..... | ..... | 4 | 1.06 | 2,705 | 386.21 | 17 | 2.43 | 20 | 2.86 |
| Enteritis | 88 | 19.41 | ..... | ..... | 3 | .66 | 120 | 31.89 | ..... | ..... | ..... | ..... | 87 | 12.42 | 2 | .29 | 2 | .29 |
| Perityphlitis and appendicitis | 11 | 2.43 | ..... | ..... | 2 | .44 | 12 | 3.19 | ..... | ..... | ..... | ..... | 34 | 4.85 | ..... | ..... | 2 | .29 |
| Digestive system, others | 154 | 33.96 | 2 | .44 | 2 | .44 | 118 | 31.36 | ..... | ..... | 1 | .27 | 119 | 16.99 | 1 | .14 | ..... | ..... |
| Total diseases of the digestive system | 2,177 | 480.06 | 3 | .66 | 47 | 10.36 | 2,560 | 680.31 | ..... | ..... | 7 | 1.87 | 3,685 | 526.12 | 22 | 3.15 | 26 | 3.72 |
| Heart, diseases of | 22 | 4.85 | 3 | .66 | 2 | .44 | 15 | 3.99 | 1 | .27 | 1 | .27 | 29 | 4.14 | 10 | 1.43 | 2 | .29 |
| Arteries and veins | 8 | 1.76 | 1 | .22 | ..... | ..... | 13 | 3.45 | ..... | ..... | ..... | ..... | 20 | 2.86 | 1 | .14 | ..... | ..... |
| Total diseases of the circulatory system | 30 | 6.61 | 4 | .88 | 2 | .44 | 28 | 7.44 | 1 | .27 | 1 | .27 | 49 | 7.00 | 11 | 1.57 | 2 | .29 |
| Bronchitis | 129 | 28.45 | ..... | ..... | ..... | ..... | 110 | 29.23 | 1 | .27 | ..... | ..... | 345 | 49.26 | 7 | 1.00 | ..... | ..... |
| Pneumonia | 20 | 4.41 | ..... | ..... | 3 | .66 | 9 | 2.39 | ..... | ..... | 1 | .27 | 48 | 6.85 | 4 | .57 | 8 | 1.14 |
| Pleurisy | 9 | 1.98 | ..... | ..... | ..... | ..... | 6 | 1.59 | ..... | ..... | ..... | ..... | 17 | 2.43 | ..... | ..... | ..... | ..... |
| Respiratory system, others | 41 | 9.04 | 1 | .22 | 1 | .22 | 11 | 2.92 | ..... | ..... | ..... | ..... | 135 | 19.27 | 1 | .14 | ..... | ..... |
| Total diseases of the respiratory organs | 199 | 43.88 | 1 | .22 | 4 | .88 | 136 | 36.13 | 1 | .27 | 1 | .27 | 545 | 77.81 | 12 | 1.71 | 8 | 1.14 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidneys, diseases of | 13 | 2.87 | ..... | ..... | 1 | .22 | 10 | 2.66 | ..... | ..... | 1 | .27 | 15 | 2.14 | ..... | ..... | 1 | .14 |
| Varicocele | 7 | 1.54 | ..... | ..... | ..... | ..... | 6 | 1.59 | ..... | ..... | ..... | ..... | 34 | 4.85 | 1 | .14 | ..... | ..... |
| Genito-urinary, others | 40 | 8.82 | 1 | .22 | ..... | ..... | 34 | 9.04 | ..... | ..... | ..... | ..... | 56 | 7.99 | ..... | ..... | ..... | ..... |
| Total diseases of the genito-urinary system | 60 | 13.23 | 1 | .22 | 1 | .22 | 50 | 13.29 | ..... | ..... | 1 | .27 | 105 | 14.98 | 1 | .14 | 1 | .14 |
| Adenitis | 13 | 2.87 | ..... | ..... | ..... | ..... | 19 | 5.05 | ..... | ..... | ..... | ..... | 39 | 5.57 | ..... | ..... | ..... | ..... |
| Lymphatic system, others | 7 | 1.54 | ..... | ..... | ..... | ..... | 2 | .53 | ..... | ..... | ..... | ..... | 14 | 2.00 | ..... | ..... | ..... | ..... |
| Total diseases of the lymphatic system | 20 | 4.41 | ..... | ..... | ..... | ..... | 21 | 5.58 | ..... | ..... | ..... | ..... | 53 | 7.57 | ..... | ..... | ..... | ..... |
| Rheumatism, muscular | 223 | 49.17 | 1 | .22 | ..... | ..... | 124 | 32.95 | ..... | ..... | ..... | ..... | 228 | 32.55 | 4 | .57 | ..... | ..... |
| Osteitis and periostitis | 1 | .22 | ..... | ..... | ..... | ..... | 1 | .27 | ..... | ..... | ..... | ..... | 11 | 1.57 | ..... | ..... | ..... | ..... |
| Arthritis and synovitis | 19 | 4.19 | ..... | ..... | ..... | ..... | 21 | 5.58 | ..... | ..... | ..... | ..... | 58 | 8.28 | 5 | .71 | ..... | ..... |
| Rheumatism, chronic articular | 36 | 7.94 | 1 | .22 | ..... | ..... | 10 | 2.66 | ..... | ..... | ..... | ..... | 92 | 13.13 | 15 | 2.14 | 1 | .14 |
| Muscles, bones, and joints, others | 3 | .66 | 1 | .22 | ..... | ..... | 7 | 1.86 | ..... | ..... | ..... | ..... | 10 | 1.43 | ..... | ..... | ..... | ..... |
| Total diseases of the muscles, bones, and joints | 282 | 62.18 | 3 | .66 | ..... | ..... | 163 | 43.32 | ..... | ..... | ..... | ..... | 399 | 56.96 | 24 | 3.42 | 1 | .14 |
| Total diseases of the integumentary system, all | 151 | 33.30 | 3 | .66 | ..... | ..... | 105 | 27.90 | ..... | ..... | ..... | ..... | 596 | 85.09 | ..... | ..... | 3 | .43 |
| Total diseases of the eye | 18 | 3.97 | 1 | .22 | ..... | ..... | 11 | 2.92 | ..... | ..... | ..... | ..... | 65 | 9.28 | 8 | 1.14 | ..... | ..... |
| Total diseases of the ear | 8 | 1.76 | ..... | ..... | ..... | ..... | 20 | 5.31 | ..... | ..... | ..... | ..... | 113 | 16.13 | 3 | .43 | ..... | ..... |
| Total diseases of the nose | 3 | .66 | 1 | .22 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3 | .43 | ..... | ..... | ..... | ..... |
| Total unclassified | 924 | 203.75 | ..... | ..... | 18 | 3.97 | 126 | 33.48 | ..... | ..... | ..... | ..... | 13 | 1.86 | 1 | .14 | ..... | ..... |
| Total for diseases | 17,774 | 3,919.29 | 37 | 8.16 | 334 | 73.65 | 7,748 | 2,058.99 | 17 | 4.52 | 186 | 49.43 | 12,045 | 1,719.73 | 118 | 16.85 | 149 | 21.27 |
| Drowning | ..... | ..... | ..... | ..... | 1 | .22 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | .14 | ..... | ..... | 1 | .14 |
| Exhaustion from exposure and fatigue | 87 | 19.19 | ..... | ..... | 1 | .22 | 161 | 42.78 | ..... | ..... | 1 | .27 | 19 | 2.71 | 2 | .29 | ..... | ..... |
| Heat stroke | 73 | 16.10 | 3 | .66 | ..... | ..... | 14 | 3.72 | ..... | ..... | ..... | ..... | 7 | 1.00 | ..... | ..... | ..... | ..... |
| Venomous bites, stings, and wounds | 6 | 1.32 | ..... | ..... | ..... | ..... | 16 | 4.25 | ..... | ..... | ..... | ..... | 71 | 10.14 | ..... | ..... | ..... | ..... |
| Abrasions, blisters, burns, and scalds | 18 | 3.97 | ..... | ..... | ..... | ..... | 34 | 9.04 | ..... | ..... | ..... | ..... | 110 | 15.70 | ..... | ..... | ..... | ..... |
| Compression and concussion of brain | ..... | ..... | ..... | ..... | ..... | ..... | 3 | .80 | ..... | ..... | ..... | ..... | 6 | .86 | ..... | ..... | ..... | ..... |
| Contusions and sprains | 80 | 17.64 | ..... | ..... | ..... | ..... | 59 | 15.68 | ..... | ..... | ..... | ..... | 198 | 28.27 | 3 | .43 | ..... | ..... |
| Dislocations | 7 | 1.54 | ..... | ..... | ..... | ..... | 6 | 1.59 | ..... | ..... | ..... | ..... | 14 | 2.00 | ..... | ..... | ..... | ..... |
| Fractures (not shot) | 21 | 4.63 | ..... | ..... | ..... | ..... | 17 | 4.52 | 1 | .27 | 1 | .27 | 31 | 4.43 | ..... | ..... | 1 | .14 |
| Herniæ | 36 | 7.94 | 4 | .88 | ..... | ..... | 47 | 12.49 | 1 | .27 | 1 | .27 | 55 | 7.85 | 6 | .86 | ..... | ..... |
| Wounds, contused, lacerated, and punctured | 42 | 9.26 | 2 | .44 | ..... | ..... | 20 | 5.31 | ..... | ..... | ..... | ..... | 93 | 13.28 | ..... | ..... | ..... | ..... |
| Wounds, incised | 27 | 5.95 | ..... | ..... | ..... | ..... | 13 | 3.45 | ..... | ..... | ..... | ..... | 50 | 7.14 | ..... | ..... | 1 | .14 |
| Wounds, gunshot | 264 | 58.22 | ..... | ..... | 54 | 11.91 | 34 | 9.04 | ..... | ..... | 7 | 1.86 | 99 | 14.14 | 8 | 1.14 | 20 | 2.86 |
| Secondary results of injury | 1 | .22 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 6 | .86 | ..... | ..... | ..... | ..... |
| Other injuries | 23 | 5.07 | ..... | ..... | ..... | ..... | 16 | 4.25 | ..... | ..... | ..... | ..... | 27 | 3.85 | ..... | ..... | 1 | .14 |
| Total for injuries | 685 | 151.05 | 9 | 1.98 | 56 | 12.35 | 440 | 116.93 | 2 | .53 | 10 | 2.66 | 787 | 112.36 | 19 | 2.71 | 24 | 3.43 |
| Total for diseases and injuries | 18,459 | 4,070.34 | 46 | 10.14 | 390 | 86.00 | 8,188 | 2,175.92 | 19 | 5.05 | 196 | 52.09 | 12,832 | 1,832.10 | 187 | 19.56 | 178 | 24.70 |

TABLE IV.—*Volunteer Army, 1898—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and countries in which service was rendered*—Continued.

| | Total islands. | | | | | | Total United States. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 15,302. | | | | | | 85,269. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 3 | 0.20 | | | 1 | 0.07 | 32 | 0.38 | | | 3 | 0.04 |
| Measles | 471 | 30.78 | | | 3 | .20 | 5,743 | 67.35 | 7 | 0.08 | 55 | .65 |
| Smallpox | 65 | 4.25 | | | 16 | 1.05 | 4 | .05 | | | | |
| Vaccinia | 303 | 19.80 | | | | | 3,916 | 45.93 | 1 | .01 | | |
| Influenza | 78 | 5.10 | | | | | 2,651 | 31.09 | 1 | .01 | | |
| Dengue | 55 | 3.59 | | | 2 | .13 | 158 | 1.85 | | | | |
| Mumps | 354 | 23.13 | | | | | 1,509 | 17.70 | 2 | .02 | | |
| Diphtheria | 12 | .78 | | | | | 30 | .35 | | | 1 | .01 |
| Typhoid fever | 2,279 | 148.94 | 7 | 0.46 | 318 | 20.78 | 14,439 | 169.34 | 17 | .20 | 1,415 | 16.59 |
| Yellow fever | 554 | 36.20 | | | 72 | 4.71 | 5 | .06 | | | 1 | .01 |
| Cerebro-spinal fever | 12 | .78 | 1 | .07 | 10 | .65 | 94 | 1.10 | 2 | .02 | 55 | .65 |
| Malarial fever, intermittent | 11,561 | 755.52 | 1 | .07 | | | 27,591 | 323.57 | | | | |
| Malarial fever, remittent | 5,204 | 340.09 | 4 | .26 | 42 | 2.74 | 12,078 | 141.65 | 18 | .21 | 32 | .38 |
| Malarial fever, pernicious | 87 | 5.69 | | | 43 | 2.81 | 118 | 1.38 | 5 | .06 | 62 | .73 |
| Malarial cachexia | 336 | 21.96 | 1 | .07 | 3 | .20 | 772 | 9.05 | 17 | .20 | 13 | .15 |
| Fever, undetermined | 802 | 52.41 | | | | | 2,207 | 25.88 | | | 1 | .01 |
| Erysipelas | 7 | .46 | | | | | 60 | .70 | | | | |
| Septicæmia and tetanus | 4 | .26 | | | 4 | .26 | 14 | .16 | | | 10 | .12 |
| Rheumatic fever | 49 | 3.20 | 1 | .07 | 2 | .13 | 295 | 3.46 | 7 | .08 | | |
| Consumption | 97 | 6.34 | 20 | 1.31 | 8 | .52 | 321 | 3.76 | 98 | 1.15 | 14 | .16 |
| Cancer | 1 | .07 | | | | | 12 | .14 | 1 | .01 | 2 | .02 |
| Syphilis and results | 122 | 7.97 | 7 | .46 | | | 931 | 10.92 | 90 | 1.06 | 1 | .01 |
| Gonorrhea and results | 832 | 54.37 | 1 | .07 | | | 4,406 | 51.67 | 45 | .53 | 1 | .01 |
| Chancroid and results | 683 | 44.63 | 2 | .13 | | | 1,393 | 16.34 | 8 | .09 | | |
| Infections, others | 24 | 1.57 | 2 | 13 | | | 314 | 3.68 | 2 | .02 | | |
| Total infectious diseases | 23,995 | 1,568.09 | 47 | 3.07 | 524 | 34.25 | 79,093 | 927.57 | 321 | 3.75 | 1,666 | 19.54 |
| Anæmia | 63 | 4.12 | 2 | .13 | | | 288 | 3.38 | 2 | .02 | | |
| Nutrition, others | 265 | 17.32 | 1 | .07 | 2 | .13 | 253 | 2.97 | 19 | .22 | 1 | .01 |
| Total diseases of nutrition | 328 | 21.44 | 3 | .20 | 2 | .13 | 541 | 6.35 | 21 | .24 | 1 | .01 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alcoholism | 147 | 9.61 | ...... | ...... | 4 | .26 | 417 | 4.89 | 25 | .29 | 10 | .12 |
| Brain and spinal cord | 57 | 3.72 | 12 | .78 | 9 | .59 | 518 | 6.08 | 59 | .69 | 21 | .25 |
| Insanity | 14 | .91 | 1 | .07 | ...... | ...... | 89 | 1.04 | 51 | .60 | 2 | .02 |
| Meningitis | 13 | .85 | 3 | .20 | 7 | .46 | 41 | .48 | ...... | ...... | 18 | .21 |
| Poisoning, narcotic | 13 | .85 | ...... | ...... | ...... | ...... | 35 | .41 | 7 | .08 | 3 | .04 |
| Nervous system, others | 282 | 18.43 | 5 | .33 | ...... | ...... | 2,262 | 26.52 | 29 | .34 | 2 | .02 |
| Total diseases of the nervous system | 526 | 34.38 | 21 | 1.37 | 20 | 1.31 | 3,362 | 39.42 | 171 | 2.00 | 56 | .66 |
| Poisoning, irritant | 8 | .52 | ...... | ...... | 2 | .13 | 236 | 2.77 | 1 | .01 | 7 | .08 |
| Tonsillitis, pharyngitis, and sore throat | 327 | 21.37 | ...... | ...... | ...... | ...... | 2,674 | 31.36 | 2 | .02 | 1 | .01 |
| Peritonitis | 33 | 2.16 | ...... | ...... | 1 | .07 | 65 | .76 | ...... | ...... | 21 | .25 |
| Dyspepsia, colic, and constipation | 645 | 42.15 | ...... | ...... | ...... | ...... | 8,712 | 102.17 | 23 | .27 | 3 | .04 |
| Gastritis | 308 | 20.13 | 2 | .13 | 2 | .13 | 1,935 | 22.69 | 7 | .08 | 2 | .02 |
| Diarrheal diseases | 6,358 | 415.50 | 18 | 1.18 | 63 | 4.12 | 36,721 | 430.65 | 36 | .42 | 51 | .60 |
| Enteritis | 295 | 19.28 | 2 | .13 | 5 | .33 | 2,261 | 26.52 | 2 | .02 | 11 | .13 |
| Perityphlitis and appendicitis | 57 | 3.72 | ...... | ...... | 4 | .26 | 198 | 2.32 | 10 | .12 | 18 | .21 |
| Digestive system, others | 391 | 25.55 | 3 | .20 | 3 | .20 | 4,622 | 54.21 | 44 | .54 | 13 | .15 |
| Total diseases of the digestive system | 8,422 | 550.39 | 25 | 1.63 | 80 | 5.23 | 57,424 | 673.45 | 125 | 1.48 | 127 | 1.49 |
| Heart, diseases of | 66 | 4.31 | 14 | .91 | 5 | .33 | 285 | 3.34 | 58 | .68 | 8 | .09 |
| Arteries and veins | 41 | 2.68 | 2 | .13 | ...... | ...... | 141 | 1.65 | 21 | .25 | ...... | ...... |
| Total diseases of the circulatory system | 107 | 6.99 | 16 | 1.05 | 5 | .33 | 426 | 4.99 | 79 | .93 | 8 | .09 |
| Bronchitis | 584 | 38.16 | 8 | .52 | ...... | ...... | 7,331 | 85.98 | 29 | .34 | 1 | .01 |
| Pneumonia | 77 | 5.03 | 4 | .26 | 12 | .78 | 717 | 8.41 | 6 | .07 | 85 | 1.00 |
| Pleurisy | 32 | 2.09 | ...... | ...... | ...... | ...... | 373 | 4.37 | 4 | .05 | 6 | .07 |
| Respiratory system, others | 187 | 12.22 | 2 | .13 | 1 | .07 | 4,203 | 49.29 | 18 | .21 | 2 | .02 |
| Total diseases of the respiratory organs | 880 | 57.51 | 14 | .91 | 13 | .85 | 12,624 | 148.05 | 57 | .67 | 94 | 1.10 |
| Kidneys, diseases of | 38 | 2.48 | ...... | ...... | 3 | .20 | 189 | 2.22 | 16 | .19 | 10 | .12 |
| Varicocele | 47 | 3.07 | 1 | .07 | ...... | ...... | 217 | 2.54 | 19 | .22 | ...... | ...... |
| Genito-urinary, others | 130 | 8.50 | 1 | .07 | ...... | ...... | 823 | 9.65 | 18 | .21 | 2 | .02 |
| Total diseases of the genito-urinary system | 215 | 14.05 | 2 | .13 | 3 | .20 | 1,229 | 14.41 | 53 | .62 | 12 | .14 |
| Adeni | 71 | 4.64 | ...... | ...... | ...... | ...... | 274 | 3.21 | 5 | .06 | ...... | ...... |
| Lymphatic system, others | 23 | 1.50 | ...... | ...... | ...... | ...... | 80 | .94 | 2 | .02 | ...... | ...... |
| Total diseases of the lymphatic system | 94 | 6.14 | ...... | ...... | ...... | ...... | 354 | 4.15 | 7 | .08 | ...... | ...... |
| Rheumatism, muscular | 575 | 37.58 | 5 | .33 | ...... | ...... | 4,897 | 57.43 | 59 | .69 | ...... | ...... |
| Osteitis and periostitis | 13 | .85 | ...... | ...... | ...... | ...... | 103 | 1.21 | 3 | .04 | ...... | ...... |
| Arthritis and synovitis | 98 | 6.40 | 5 | .33 | ...... | ...... | 483 | 5.66 | 13 | .15 | ...... | ...... |
| Rheumatism, chronic articular | 138 | 9.02 | 16 | 1.05 | 1 | .07 | 413 | 4.84 | 32 | .38 | ...... | ...... |
| Muscles, bones, and joints, others | 20 | 1.31 | 1 | .07 | ...... | ...... | 168 | 1.97 | 31 | .36 | ...... | ...... |
| Total diseases of the muscles, bones, and joints | 844 | 55.16 | 27 | 1.76 | 1 | .07 | 6,064 | 71.11 | 138 | 1.62 | ...... | ...... |

TABLE IV.—*Volunteer Army, 1898—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and countries in which service was rendered*—Continued.

| | Total islands. | | | | | | Total United States. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 15,302. | | | | | | 85,269. | | | | | |
| | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| Causes of admission to sick report. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total diseases of the integumentary system | 852 | 55.68 | 3 | 0.20 | 3 | 0.20 | 3,819 | 44.79 | 15 | 0.18 | | |
| Total diseases of the eye | 94 | 6.14 | 9 | 59 | | | 856 | 10.04 | 26 | .30 | | |
| Total diseases of the ear | 141 | 9.21 | 3 | .20 | | | 608 | 7.07 | 27 | .32 | 2 | 0.02 |
| Total diseases of the nose | 6 | .39 | 1 | .07 | | | 46 | .54 | 4 | .05 | | |
| Total unclassified | 1,063 | 69.46 | 1 | .07 | 18 | 1.18 | 1,192 | 13.98 | 52 | .61 | 20 | .23 |
| Total for diseases | 37,567 | 2,455.04 | 172 | 11.24 | 669 | 43.72 | 167,633 | 1,965.93 | 1,096 | 12.85 | 1,986 | 23.29 |
| Drowning | 1 | .07 | | | 2 | .13 | | | | | 11 | .13 |
| Exhaustion from exposure and fatigue | 267 | 17.45 | 2 | .13 | 2 | .13 | 830 | 9.73 | 6 | .07 | 1 | .01 |
| Heat stroke | 94 | 6.14 | 3 | .20 | | | 195 | 2.29 | 6 | .07 | 1 | .01 |
| Lightning | | | | | | | 22 | .26 | | | 2 | .02 |
| Venomous bites, stings, and wounds | 93 | 6.08 | | | | | 226 | 2.65 | 1 | .01 | | |
| Abrasions, blisters, burns, and scalds | 162 | 10.59 | | | | | 1,005 | 11.79 | 1 | .01 | | |
| Compression and concussion of brain | 9 | .59 | | | | | 48 | .56 | 2 | .02 | 2 | .02 |
| Contusions and sprains | 337 | 22.02 | 3 | 20 | | | 3,265 | 38.29 | 18 | .21 | | |
| Dislocations | 27 | 1.76 | | | | | 146 | 1.71 | 9 | .11 | 1 | .01 |
| Fractures (not shot) | 69 | 4.51 | 1 | .07 | 2 | .13 | 433 | 5.08 | 13 | .15 | 11 | .13 |
| Herniæ | 138 | 9.02 | 11 | .72 | 1 | .07 | 652 | 7.65 | 102 | 1.20 | | |
| Wounds, contused, lacerated, and punctured | 155 | 10.13 | 2 | .13 | | | 942 | 11.05 | 2 | .02 | 1 | .01 |
| Wounds, incised | 90 | 5.88 | | | 1 | .07 | 599 | 7.02 | 1 | .01 | 6 | .07 |
| Wounds, gunshot | 397 | 25.94 | 8 | .52 | 81 | 5.29 | 202 | 2.37 | 10 | .12 | 37 | .43 |
| Secondary results of injury | 7 | .46 | | | | | 72 | .84 | 17 | .20 | 2 | .02 |
| Other injuries | 66 | 4.31 | | | 1 | .07 | 377 | 4.42 | 11 | .13 | 20 | .23 |
| Total for injuries | 1,912 | 124.94 | 30 | 1.96 | 90 | 5.88 | 9,014 | 105.71 | 199 | 2.33 | 95 | 1.11 |
| Total for diseases and injuries | 39,479 | 2,579.99 | 202 | 13.20 | 759 | 49.60 | 176,647 | 2,071.65 | 1,295 | 15.19 | 2,081 | 24.41 |

TABLE V.—*Volunteer Army, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and the countries in which service was rendered.*

|  | Cavalry. |  |  |  |  |  | Artillery. |  |  |  |  |  | Infantry. |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 351. |  |  |  |  |  | 612. |  |  |  |  |  | 39,148. |  |  |  |  |  |
| Causes of admission to sick report. | Admissions. |  | Discharges. |  | Deaths. |  | Admissions. |  | Discharges. |  | Deaths. |  | Admissions. |  | Discharges. |  | Deaths. |  |
|  | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 14 | 0.36 | ..... | ..... | ..... | ..... |
| Measles | 1 | 2.85 | ..... | ..... | ..... | ..... | 8 | 13.07 | ..... | ..... | ..... | ..... | 1,204 | 30.75 | ..... | ..... | 8 | 0.20 |
| Smallpox | ..... | ..... | ..... | ..... | ..... | ..... | 2 | 3.27 | ..... | ..... | ..... | ..... | 208 | 5.31 | ..... | ..... | 59 | 1.51 |
| Vaccinia | 20 | 56.98 | ..... | ..... | ..... | ..... | 17 | 27.78 | ..... | ..... | ..... | ..... | 3,416 | 87.25 | ..... | ..... | 1 | .03 |
| Influenza | 1 | 2.85 | ..... | ..... | ..... | ..... | 15 | 24.51 | ..... | ..... | ..... | ..... | 3,112 | 79.49 | ..... | ..... | 4 | .10 |
| Dengue | 224 | 638.18 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 318 | 8.12 | ..... | ..... | ..... | ..... |
| Mumps | 2 | 5.70 | ..... | ..... | ..... | ..... | 8 | 13.07 | ..... | ..... | ..... | ..... | 714 | 18.24 | ..... | ..... | ..... | ..... |
| Diphtheria | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 30 | .77 | ..... | ..... | 4 | .10 |
| Typhoid fever | 7 | 19.94 | ..... | ..... | 2 | 5.70 | 6 | 9.80 | ..... | ..... | 2 | 3.27 | 657 | 16.78 | 12 | 0.31 | 74 | 1.89 |
| Yellow fever | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3 | .08 | ..... | ..... | ..... | ..... |
| Cerebro-spinal fever | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 11 | .28 | ..... | ..... | 8 | .20 |
| Malarial fever, intermittent | 776 | 2,210.83 | 1 | 2.85 | ..... | ..... | 66 | 107.85 | ..... | ..... | ..... | ..... | 10,689 | 273.04 | 2 | .05 | ..... | ..... |
| Malarial fever, remittent | 95 | 270.69 | ..... | ..... | ..... | ..... | 292 | 477.12 | ..... | ..... | ..... | ..... | 6,980 | 178.30 | 5 | .13 | 6 | .15 |
| Malarial fever, pernicious | 1 | 2.85 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 52 | 1.33 | ..... | ..... | 29 | .74 |
| Malarial cachexia | 14 | 39.89 | ..... | ..... | ..... | ..... | 1 | 1.63 | ..... | ..... | ..... | ..... | 351 | 8.97 | 9 | .23 | 8 | .20 |
| Fever, undetermined | 22 | 62.68 | ..... | ..... | ..... | ..... | 7 | 11.44 | ..... | ..... | ..... | ..... | 846 | 21.61 | ..... | ..... | ..... | ..... |
| Erysipelas | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 1.63 | ..... | ..... | 1 | 1.63 | 21 | .54 | ..... | ..... | 1 | .03 |
| Septicæmia and tetanus | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 1.63 | ..... | ..... | ..... | ..... | 2 | .05 | ..... | ..... | 1 | .03 |
| Rheumatic fever | 2 | 5.70 | ..... | ..... | ..... | ..... | 3 | 4.90 | ..... | ..... | ..... | ..... | 123 | 3.14 | 3 | .08 | ..... | ..... |
| Consumption | 2 | 5.70 | 1 | 2.85 | ..... | ..... | ..... | ..... | 2 | 3.27 | ..... | ..... | 112 | 2.86 | 38 | .97 | 16 | .41 |
| Cancer | 1 | 2.85 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 4 | .10 | ..... | ..... | 1 | .03 |
| Syphilis and results | 8 | 22.79 | ..... | ..... | ..... | ..... | 15 | 24.51 | 2 | 3.27 | ..... | ..... | 491 | 12.54 | 50 | 1.28 | ..... | ..... |
| Gonorrhea and results | 28 | 79.77 | ..... | ..... | ..... | ..... | 51 | 83.33 | ..... | ..... | ..... | ..... | 2,325 | 59.39 | 15 | .38 | ..... | ..... |
| Chancroid and results | 31 | 88.31 | ..... | ..... | ..... | ..... | 45 | 73.53 | ..... | ..... | ..... | ..... | 1,508 | 38.52 | 2 | .05 | ..... | ..... |
| Infections, others | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 79 | 2.02 | 2 | .05 | 3 | .08 |
| Total infectious diseases | 1,235 | 3,518.56 | 2 | 5.70 | 2 | 5.70 | 538 | 879.07 | 4 | 6.54 | 3 | 4.90 | 33,270 | 849.85 | 138 | 3.53 | 223 | 5.70 |
| Anæmia | 2 | 5.70 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 138 | 3.53 | 7 | .18 | ..... | ..... |
| Nutrition, others | 3 | 8.55 | 1 | 2.85 | ..... | ..... | 1 | 1.63 | ..... | ..... | ..... | ..... | 45 | 1.15 | 3 | .08 | 2 | .05 |
| Total diseases of nutrition | 5 | 14.25 | 1 | 2.85 | ..... | ..... | 1 | 1.63 | ..... | ..... | ..... | ..... | 183 | 4.68 | 10 | .26 | 2 | .05 |

TABLE V.—*Volunteer Army, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and the countries in which service was rendered*—Continued.

| | Cavalry. | | | | | | Artillery. | | | | | | Infantry. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 351. | | | | | | 612. | | | | | | 39,148. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Alcoholism | 2 | 5.70 | | | | | 16 | 26.14 | | | | | 285 | 7.28 | 3 | 0.08 | 5 | 0.13 |
| Brain and spinal cord | 1 | 2.85 | | | | | 1 | 1.63 | | | | | 145 | 3.70 | 12 | .31 | 4 | .10 |
| Insanity | | | | | | | | | | | | | 38 | .97 | 18 | .46 | | |
| Meningitis | | | | | | | | | | | | | 22 | .56 | 4 | .10 | 10 | .26 |
| Poisoning, narcotic | | | | | | | 1 | 1.63 | | | | | 10 | .26 | 1 | .03 | 2 | .05 |
| Nervous system, others | 9 | 25.64 | | | | | 18 | 29.41 | 2 | 3.27 | | | 973 | 24.85 | 14 | .36 | | |
| Total diseases of the nervous system | 12 | 34.19 | | | | | 36 | 58.81 | 2 | 3.27 | | | 1,473 | 37.62 | 52 | 1.34 | 21 | .54 |
| Poisoning, irritant | | | | | | | 5 | 8.17 | | | | | 99 | 2.53 | | | 2 | .05 |
| Tonsillitis, pharyngitis, and sore throat | 10 | 28.49 | | | | | 15 | 24.51 | | | | | 1,298 | 33.15 | | | 1 | .03 |
| Peritonitis | | | | | | | 1 | 1.63 | | | | | 19 | .49 | | | 4 | .10 |
| Dyspepsia, colic, and constipation | 37 | 105.42 | | | | | 32 | 52.29 | 1 | 1.63 | | | 2,627 | 67.10 | 1 | .03 | | |
| Gastritis | 3 | 8.55 | | | | | 31 | 50.65 | | | | | 1,021 | 26.08 | 5 | .13 | | |
| Diarrheal diseases | 222 | 632.48 | | | 1 | 2.85 | 338 | 552.28 | | | 1 | 1.63 | 12,506 | 319.45 | 28 | .72 | 72 | 1.84 |
| Enteritis | 4 | 11.40 | | | | | 29 | 47.38 | 1 | 1.63 | 1 | 1.63 | 317 | 8.10 | 1 | .03 | 5 | .13 |
| Perityphlitis and appendicitis | | | | | | | 2 | 3.27 | | | | | 90 | 2.30 | 1 | .03 | 3 | .08 |
| Digestive system, others | 12 | 34.19 | | | | | 28 | 45.75 | | | 1 | 1.63 | 1,169 | 29.86 | 18 | .46 | 6 | .15 |
| Total diseases of the digestive system. | 288 | 820.53 | | | 1 | 2.85 | 481 | 785.93 | 2 | 3.26 | 3 | 4.89 | 19,146 | 489.07 | 54 | 1.40 | 93 | 2.38 |
| Heart, diseases of | 6 | 17.09 | | | | | 1 | 1.63 | 1 | 1.63 | | | 132 | 3.37 | 21 | .54 | 3 | .08 |
| Arteries and veins | | | | | | | 6 | 9.80 | | | | | 87 | 2.22 | 9 | .23 | 2 | .05 |
| Total diseases of the circulatory system. | 6 | 17.09 | | | | | 7 | 11.43 | 1 | 1.63 | | | 219 | 5.59 | 30 | .77 | 5 | .13 |
| Bronchitis | 18 | 51.28 | | | | | 59 | 96.41 | 1 | 1.63 | | | 3,108 | 79.38 | 7 | .18 | | |
| Pneumonia | 3 | 8.55 | | | | | 2 | 3.27 | | | 1 | 1.63 | 289 | 7.38 | 3 | .08 | 46 | 1.18 |
| Pleurisy | 5 | 14.25 | | | | | 3 | 4.90 | | | | | 121 | 3.09 | 2 | .05 | | |
| Respiratory system, others | 1 | 2.85 | | | | | 25 | 40.85 | 1 | 1.63 | | | 1,710 | 43.68 | 3 | .08 | 3 | .08 |
| Total diseases of the respiratory organs. | 27 | 76.93 | | | | | 89 | 145.43 | 2 | 3.26 | 1 | 1.63 | 5,228 | 133.53 | 15 | .39 | 49 | 1.26 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidneys, diseases of | 2 | 5.70 | | | | | | | | | | | 65 | 1.66 | 3 | .08 | 7 | .18 |
| Varicocele | 1 | 2.85 | | | | | 2 | 3.27 | | | | | 159 | 4.06 | 5 | .13 | | |
| Genito-urinary, others | 4 | 11.40 | | | | | 14 | 22.88 | | | | | 528 | 13.49 | 10 | .26 | | |
| Total diseases of the genito-urinary system | 7 | 19.95 | | | | | 16 | 26.15 | | | | | 752 | 19.21 | 18 | .47 | 7 | .18 |
| Adenitis | 2 | 5.70 | | | | | 7 | 11.44 | | | | | 188 | 4.80 | 1 | .03 | | |
| Lymphatic system, others | | | | | | | | | | | | | 24 | .61 | 1 | .03 | | |
| Total diseases of the lymphatic system | 2 | 5.70 | | | | | 7 | 11.44 | | | | | 212 | 5.41 | 2 | .06 | | |
| Rheumatism, muscular | 7 | 19.94 | | | | | 42 | 68.63 | 1 | 1.63 | | | 1,901 | 48.56 | 20 | .51 | | |
| Osteitis and periostitis | | | | | | | 1 | 1.63 | 1 | 1.63 | | | 54 | 1.38 | 2 | .05 | | |
| Arthritis and synovitis | 3 | 8.55 | | | | | 6 | 9.80 | | | | | 250 | 6.39 | 5 | .13 | | |
| Rheumatism, chronic articular | 2 | 5.70 | | | | | 11 | 17.97 | | | | | 399 | 10.19 | 25 | .64 | | |
| Muscles, bones, and joints, others | | | | | | | 2 | 3.27 | 1 | 1.63 | | | 79 | 2.02 | 6 | .15 | | |
| Total diseases of the muscles, bones, and joints | 12 | 34.19 | | | | | 62 | 101.30 | 3 | 4.89 | | | 2,683 | 68.54 | 58 | 1.48 | | |
| Total diseases of the integumentary system, all | 64 | 182.35 | | | | | 125 | 204.25 | | | | | 3,211 | 82.02 | 2 | .05 | | |
| Total diseases of the eye | 2 | 5.70 | | | | | 18 | 29.41 | 2 | 3.27 | | | 425 | 10.86 | 8 | .20 | | |
| Total diseases of the ear | 9 | 25.64 | | | | | 23 | 37.58 | 3 | 4.90 | | | 414 | 10.57 | 30 | .77 | | |
| Total diseases of the nose | 1 | 2.85 | | | | | | | | | | | 45 | 1.15 | 1 | .03 | | |
| Total unclassified | 2 | 5.70 | | | | | | | | | | | 193 | 4.93 | | | | |
| Total for diseases | 1,672 | 4,763.53 | 3 | 8.55 | 3 | 8.55 | 1,403 | 2,292.49 | 19 | 31.05 | 7 | 11.44 | 67,454 | 1,723.05 | 418 | 10.68 | 400 | 10.22 |
| Drowning | | | | | | | | | | | 1 | 1.63 | | | | | 17 | .43 |
| Exhaustion from exposure and fatigue | 12 | 34.19 | | | | | 7 | 11.44 | | | | | 691 | 17.65 | | | 1 | .03 |
| Heat stroke | 2 | 5.70 | | | | | 2 | 3.27 | | | | | 57 | 1.46 | 1 | .03 | | |
| Lightning | | | | | | | | | | | | | 2 | .05 | | | | |
| Venomous bites, stings, and wounds | 4 | 11.40 | | | | | 11 | 17.97 | | | | | 251 | 6.41 | | | | |
| Abrasions, blisters, burns, and scalds | 5 | 14.25 | | | | | 59 | 96.41 | | | | | 528 | 13.49 | | | | |
| Compression and concussion of brain | 1 | 2.85 | | | | | | | | | | | 8 | .20 | | | 1 | .03 |
| Contusions and sprains | 22 | 62.68 | | | | | 25 | 40.85 | | | | | 1,512 | 38.62 | 4 | .10 | | |
| Dislocations | | | | | | | | | | | | | 66 | 1.69 | | | | |
| Fractures (not shot) | 9 | 25.64 | | | | | 3 | 4.90 | 2 | 3.27 | | | 186 | 4.75 | 6 | .15 | 2 | .05 |
| Herniæ | 3 | 8.55 | | | | | 6 | 9.80 | 1 | 1.63 | | | 301 | 7.69 | 28 | .72 | | |
| Wounds, contused, lacerated, and punctured | 2 | 5.70 | | | | | 11 | 17.97 | | | | | 536 | 13.69 | 1 | .03 | 1 | .03 |
| Wounds, incised | 4 | 11.40 | | | | | 5 | 8.17 | | | | | 402 | 10.27 | | | 3 | .08 |
| Wounds, gunshot | 15 | 42.74 | | | | | 20 | 32.68 | | | 7 | 11.44 | 1,221 | 31.19 | 50 | 1.28 | 283 | 7.23 |
| Secondary results of injury | | | | | | | | | | | | | 64 | 1.63 | 5 | .13 | | |
| Other injuries | | | | | | | 3 | 4.90 | | | | | 168 | 4.29 | 2 | .05 | 6 | .15 |
| Total for injuries | 79 | 225.07 | | | | | 152 | 248.37 | 3 | 4.90 | 8 | 13.07 | 5,993 | 153.08 | 97 | 2.48 | 314 | 8.02 |
| Total for diseases and injuries | 1,751 | 4,988.60 | 3 | 8.55 | 3 | 8.55 | 1,555 | 2,540.85 | 22 | 35.95 | 15 | 24.51 | 73,447 | 1,876.13 | 515 | 13.16 | 714 | 18.24 |

TABLE V.—*Volunteer Army, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and the countries in which service was rendered*—Continued.

|  | Engineers. |  |  |  |  |  | Signal Corps. |  |  |  |  |  | Army. |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 693. |  |  |  |  |  | 296. |  |  |  |  |  | 41,100. |  |  |  |  |  |
|  | Admissions. |  | Discharges. |  | Deaths. |  | Admissions. |  | Discharges. |  | Deaths. |  | Admissions. |  | Discharges. |  | Deaths. |  |
| Causes of admission to sick report. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 14 | 0.34 | ..... | ..... | ..... | ..... |
| Measles | 20 | 28.86 | ..... | ..... | 1 | 1.44 | 5 | 16.89 | ..... | ..... | ..... | ..... | 1,238 | 30.12 | ..... | ..... | 9 | 0.22 |
| Smallpox | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 3.38 | ..... | ..... | ..... | ..... | 211 | 5.13 | ..... | ..... | 59 | 1.44 |
| Vaccinia | 36 | 51.95 | ..... | ..... | ..... | ..... | 11 | 37.16 | ..... | ..... | ..... | ..... | 3,500 | 85.16 | ..... | ..... | 1 | .02 |
| Influenza | 99 | 142.87 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3,227 | 78.51 | ..... | ..... | 4 | .10 |
| Dengue | 14 | 20.20 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 556 | 13.53 | ..... | ..... | ..... | ..... |
| Mumps | 8 | 11.54 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 732 | 17.81 | ..... | ..... | ..... | ..... |
| Diphtheria | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 30 | .73 | ..... | ..... | 4 | .10 |
| Typhoid fever | 15 | 21.64 | ..... | ..... | ..... | ..... | 18 | 60.81 | ..... | ..... | ..... | ..... | 703 | 17.10 | 12 | 0.29 | 78 | 1.90 |
| Yellow fever | 1 | 1.44 | ..... | ..... | 1 | 1.44 | 1 | 3.38 | ..... | ..... | 1 | 3.38 | 5 | .12 | ..... | ..... | 2 | .05 |
| Cerebro-spinal fever | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 3.38 | ..... | ..... | ..... | ..... | 12 | .29 | ..... | ..... | 8 | .17 |
| Malarial fever, intermittent | 244 | 352.09 | 1 | 1.44 | ..... | ..... | 51 | 172.30 | ..... | ..... | ..... | ..... | 11,826 | 287.74 | 4 | .10 | ..... | ..... |
| Malarial fever, remittent | 74 | 106.79 | ..... | ..... | ..... | ..... | 39 | 131.76 | ..... | ..... | ..... | ..... | 7,480 | 182.00 | 5 | .12 | 6 | .15 |
| Malarial fever, pernicious | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 3.38 | ..... | ..... | ..... | ..... | 54 | 1.31 | ..... | ..... | 29 | .71 |
| Malarial cachexia | 81 | 116.88 | ..... | ..... | ..... | ..... | 4 | 13.51 | ..... | ..... | ..... | ..... | 451 | 10.97 | 9 | .22 | 8 | .19 |
| Fever, undetermined | 20 | 28.86 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 895 | 21.78 | ..... | ..... | ..... | ..... |
| Erysipelas | 1 | 1.44 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 23 | .56 | ..... | ..... | 2 | .05 |
| Septicæmia and tetanus | 2 | 2.89 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 5 | .12 | ..... | ..... | 1 | .02 |
| Rheumatic fever | 1 | 1.44 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 129 | 3.14 | 3 | .07 | ..... | ..... |
| Consumption | 2 | 2.89 | ..... | ..... | ..... | ..... | 1 | 3.38 | 1 | 3.38 | ..... | ..... | 117 | 2.85 | 42 | 1.02 | 16 | .39 |
| Cancer | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 3.38 | ..... | ..... | ..... | ..... | 6 | .15 | ..... | ..... | 1 | .02 |
| Syphilis and results | 10 | 14.43 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 524 | 12.75 | 52 | 1.27 | ..... | ..... |
| Gonorrhea and results | 45 | 64.94 | ..... | ..... | ..... | ..... | 14 | 47.30 | 1 | 3.38 | ..... | ..... | 2,463 | 59.93 | 16 | .39 | ..... | ..... |
| Chancroid and results | 30 | 43.29 | ..... | ..... | ..... | ..... | 12 | 40.54 | ..... | ..... | ..... | ..... | 1,626 | 39.56 | 2 | .05 | ..... | ..... |
| Infections, others | 3 | 4.33 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 82 | 2.00 | 2 | .05 | 3 | .07 |
| Total infectious diseases | 706 | 1,018.77 | 1 | 1.44 | 2 | 2.88 | 160 | 540.55 | 2 | 6.76 | 1 | 3.38 | 35,909 | 873.70 | 147 | 3.58 | 231 | 5.60 |
| Anæmia | 1 | 1.44 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 141 | 3.43 | 7 | .17 | ..... | ..... |
| Nutrition, others | 7 | 10.10 | 1 | 1.44 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 56 | 1.36 | 5 | .12 | 2 | .05 |
| Total diseases of nutrition | 8 | 11.54 | 1 | 1.44 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 197 | 4.79 | 12 | .29 | 2 | .05 |
| Alcoholism | 19 | 27.41 | ..... | ..... | ..... | ..... | 2 | 6.76 | ..... | ..... | ..... | ..... | 324 | 7.88 | 3 | .07 | 5 | .12 |
| Brain and spinal cord | 6 | 8.66 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 153 | 3.72 | 12 | .29 | 4 | .10 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Insanity | | | 1 | 1.44 | | | | | | | | | 38 | .92 | 19 | .46 | | |
| Meningitis | 1 | 1.44 | | | 1 | 1.44 | | | | | | | 23 | .56 | 4 | .10 | 11 | .27 |
| Poisoning, narcotic | | | | | | | 1 | 3.38 | | | | | 12 | .29 | 1 | .02 | 2 | .05 |
| Nervous system, others | 32 | 46.18 | | | | | 4 | 13.51 | | | | | 1,036 | 25.21 | 16 | .39 | | |
| Total diseases of the nervous system | 58 | 83.69 | 1 | 1.44 | 1 | 1.44 | 7 | 23.65 | | | | | 1,586 | 38.58 | 55 | 1.33 | 22 | .54 |
| Poisoning, irritant | | | | | | | 2 | 6.76 | | | | | 106 | 2.58 | | | 2 | .05 |
| Tonsillitis, pharyngitis, and sore throat | 25 | 36.07 | | | | | 4 | 13.51 | | | | | 1,352 | 32.90 | | | 1 | .02 |
| Peritonitis | 3 | 4.33 | | | 2 | 2.89 | | | | | | | 23 | .56 | | | 6 | .15 |
| Dyspepsia, colic, and constipation | 66 | 95.24 | 1 | 1.44 | | | 10 | 33.78 | | | | | 2,772 | 67.44 | 3 | .07 | | |
| Gastritis | 10 | 14.43 | | | | | 6 | 20.27 | | | | | 1,071 | 26.06 | 5 | .12 | | |
| Diarrheal diseases | 236 | 340.55 | | | | | 172 | 581.08 | | | | | 13,474 | 327.84 | 28 | .68 | 74 | 1.80 |
| Enteritis | 4 | 5.77 | | | | | 33 | 111.49 | | | | | 387 | 9.42 | 2 | .05 | 6 | .15 |
| Perityphlitis and appendicitis | 2 | 2.89 | | | | | 2 | 6.76 | | | | | 96 | 2.34 | 1 | .02 | 3 | .07 |
| Digestive system, others | 77 | 111.11 | 1 | 1.44 | | | 9 | 30.41 | | | | | 1,295 | 31.51 | 19 | .46 | 7 | .17 |
| Total diseases of the digestive system | 423 | 610.39 | 2 | 2.88 | 2 | 2.89 | 238 | 804.06 | | | | | 20,576 | 500.65 | 58 | 1.40 | 99 | 2.41 |
| Heart, diseases of | 1 | 1.44 | 2 | 2.89 | | | | | | | | | 140 | 3.41 | 24 | .58 | 3 | .07 |
| Arteries and veins | 3 | 4.33 | | | | | | | | | | | 96 | 2.34 | 9 | .22 | 2 | .05 |
| Total diseases of the circulatory system | 4 | 5.77 | 2 | 2.89 | | | | | | | | | 236 | 5.75 | 33 | .80 | 5 | .12 |
| Bronchitis | 147 | 212.12 | | | | | 4 | 13.51 | | | | | 3,336 | 81.17 | 8 | .19 | | |
| Pneumonia | 13 | 18.76 | | | 3 | 4.33 | 2 | 6.76 | | | | | 309 | 7.52 | 3 | .07 | 50 | 1.22 |
| Pleurisy | 3 | 4.33 | | | | | 2 | 6.76 | | | | | 134 | 3.26 | 2 | .05 | | |
| Respiratory system, others | 18 | 25.97 | | | | | 7 | 23.65 | | | | | 1,761 | 42.85 | 4 | .10 | 3 | .07 |
| Total diseases of the respiratory organs | 181 | 261.18 | | | 3 | 4.33 | 15 | 50.68 | | | | | 5,540 | 134.80 | 17 | .41 | 53 | 1.29 |
| Kidneys, diseases of | 1 | 1.44 | | | | | | | | | | | 68 | 1.65 | 3 | .07 | 7 | .17 |
| Varicocele | 2 | 2.89 | | | | | 1 | 3.38 | | | | | 165 | 4.01 | 5 | .12 | | |
| Genito-urinary, others | 6 | 8.66 | | | | | 5 | 16.89 | | | | | 557 | 13.55 | 10 | .24 | | |
| Total diseases of the genito-urinary system | 9 | 12.99 | | | | | 6 | 20.27 | | | | | 790 | 19.21 | 18 | .43 | 7 | .17 |
| Adenitis | 3 | 4.33 | | | | | 3 | 10.14 | | | | | 203 | 4.94 | 1 | .02 | | |
| Lymphatic system, others | 4 | 5.77 | | | | | 1 | 3.38 | | | | | 29 | .71 | 1 | .02 | | |
| Total diseases of the lymphatic system | 7 | 10.10 | | | | | 4 | 13.52 | | | | | 232 | 5.65 | 2 | .04 | | |
| Rheumatism, muscular | 88 | 126.98 | | | | | 5 | 16.89 | | | | | 2,043 | 49.71 | 21 | .51 | | |
| Osteitis and periostitis | | | | | | | | | | | | | 55 | 1.34 | 3 | .07 | | |
| Arthritis and synovitis | 5 | 7.22 | | | | | | | | | | | 264 | 6.42 | 5 | .12 | | |
| Rheumatism, chronic articular | 14 | 20.20 | | | | | 1 | 3.38 | | | | | 427 | 10.39 | 25 | .61 | | |
| Muscles, bones, and joints, others | 4 | 5.77 | | | | | | | | | | | 85 | 2.07 | 7 | .17 | | |
| Total diseases of the muscles, bones, and joints | 111 | 160.17 | | | | | 6 | 20.27 | | | | | 2,874 | 69.93 | 61 | 1.48 | | |

TABLE V.—*Volunteer Army, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and the countries in which service was rendered*—Continued.

| | Engineers. | | | | | | Signal Corps. | | | | | | Army. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 693. | | | | | | 296. | | | | | | 41,100. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total diseases of the integumentary system, all | 59 | 85.14 | | | | | 12 | 40.54 | | | | | 3,471 | 84.45 | 2 | 0.05 | | |
| Total diseases of the eye | 18 | 25.97 | | | | | 1 | 3.38 | 1 | 3.38 | | | 464 | 11.29 | 11 | .27 | | |
| Total diseases of tho ear | 3 | 4.33 | 3 | 4.33 | | | 2 | 6.76 | | | | | 451 | 10.97 | 36 | .88 | | |
| Total diseases of the nose | | | | | | | | | | | | | 46 | 1.12 | 1 | .02 | | |
| Total unclassified | 7 | 10.10 | | | | | 1 | 3.38 | | | | | 203 | 4.94 | | | | |
| Total for diseases | 1,594 | 2,300.14 | 10 | 14.43 | 8 | 11.54 | 452 | 1,527.03 | 3 | 10.14 | 1 | 3.38 | 72,575 | 1,765.82 | 453 | 11.02 | 419 | 10.20 |
| Drowning | | | | | 1 | 1.44 | | | | | | | | | | | 19 | .46 |
| Exhaustion from exposure and fatigue | 2 | 2.89 | | | | | 2 | 6.76 | | | | | 714 | 17.37 | | | 1 | .02 |
| Heat stroke | | | | | | | 1 | 3.38 | | | | | 62 | 1.51 | 1 | .02 | | |
| Lightning | | | | | | | | | | | | | 2 | .05 | | | | |
| Venomous bites, stings, and wounds | 10 | 14.43 | | | | | | | | | | | 276 | 6.71 | | | | |
| Abrasions, blisters, burns, and scalds | 8 | 11.54 | | | | | 3 | 10.14 | | | | | 603 | 14.67 | | | | |
| Compression and concussion of brain | | | | | | | | | | | | | 9 | .22 | | | 1 | .02 |
| Contusions and sprains | 43 | 62.05 | | | | | 8 | 27.03 | | | | | 1,610 | 39.17 | 4 | .10 | | |
| Dislocations | | | | | | | | | | | | | 66 | 1.61 | | | | |
| Fractures (not shot) | 5 | 7.22 | | | | | | | | | 1 | 3.38 | 203 | 4.94 | 8 | .19 | 3 | .07 |
| Herniæ | 7 | 10.10 | | | | | | | | | | | 317 | 7.71 | 29 | .71 | | |
| Wounds, contused, lacerated, and punctured | 22 | 31.75 | | | | | 3 | 10.14 | | | | | 574 | 13.96 | 1 | .02 | 1 | .02 |
| Wounds, incised | 10 | 14.43 | | | | | 3 | 10.14 | | | | | 424 | 10.32 | | | 3 | .07 |
| Wounds, gunshot | 3 | 4.33 | | | | | 1 | 3.38 | | | | | 1,260 | 30.66 | 50 | 1.22 | 290 | 7.06 |
| Secondary results of injury | | | | | | | 1 | 3.38 | | | | | 65 | 1.58 | 5 | .12 | | |
| Other injuries | 4 | 5.77 | | | | | 1 | 3.38 | | | | | 176 | 4.28 | 2 | .05 | 6 | .15 |
| Total for injuries | 114 | 164.50 | | | 1 | 1.44 | 23 | 77.70 | | | 1 | 3.38 | 6,361 | 154.77 | 100 | 2.43 | 324 | 7.88 |
| Total for diseases and injuries | 1,708 | 2,464.65 | 10 | 14.43 | 9 | 12.99 | 475 | 1,604.73 | 3 | 10.14 | 2 | 6.76 | 78,936 | 1,920.49 | 553 | 13.45 | 743 | 18.08 |

TABLE V.—*Volunteer Army, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and the countries in which service was rendered*—Continued.

| | Cuba. | | | | | | Porto Rico. | | | | | | Pacific Islands. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 8,082. | | | | | | 380. | | | | | | 16,358. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 6 | 0.74 | | | | | | | | | | | | | | | | |
| Measles | 418 | 51.72 | | | 4 | 0.49 | | | | | 1 | 2.63 | 292 | 17.85 | | | | |
| Smallpox | 4 | .49 | | | 2 | .25 | 1 | 2.63 | | | | | 157 | 9.60 | | | 55 | 3.36 |
| Vaccinia | 584 | 72.26 | | | 1 | .12 | | | | | | | 819 | 50.07 | | | | |
| Influenza | 114 | 14.10 | | | | | 1 | 2.63 | | | | | 54 | 3.30 | | | | |
| Dengue | 45 | 5.57 | | | | | | | | | | | 491 | 30.01 | | | | |
| Mumps | 153 | 18.93 | | | | | | | | | | | 274 | 16.75 | | | | |
| Diphtheria | 1 | .12 | | | | | | | | | | | 24 | 1.47 | | | 3 | .18 |
| Typhoid fever | 176 | 21.78 | 1 | 0.12 | 22 | 2.72 | 8 | 21.05 | | | 1 | 2.63 | 301 | 18.40 | 6 | 0.37 | 36 | 2.20 |
| Yellow fever | 4 | .49 | | | 1 | .12 | | | | | | | | | | | | |
| Cerebro-spinal fever | 2 | .25 | | | 4 | .49 | | | | | | | 1 | .06 | | | 1 | .06 |
| Malarial fever, intermittent | 5,353 | 662.34 | 2 | .25 | | | 98 | 257.89 | | | | | 4,150 | 253.70 | 2 | .12 | | |
| Malarial fever, remittent | 2,797 | 346.08 | 3 | .37 | 3 | .37 | 44 | 115.79 | | | | | 4,096 | 250.40 | 2 | .12 | 1 | .06 |
| Malarial fever, pernicious | 32 | 3.96 | | | 20 | 2.47 | 1 | 2.63 | | | | | 13 | .79 | | | 5 | .31 |
| Malarial cachexia | 285 | 35.26 | 3 | .37 | 7 | .87 | 2 | 5.26 | | | | | 95 | 5.81 | 2 | .12 | 1 | .06 |
| Fever, undetermined | 181 | 22.40 | | | | | | | | | | | 540 | 33.01 | | | | |
| Erysipelas | 3 | .37 | | | | | | | | | | | 11 | .67 | | | 2 | .12 |
| Septicæmia and tetanus | 1 | .12 | | | 1 | .12 | | | | | | | 4 | .24 | | | | |
| Rheumatic fever | 21 | 2.60 | 1 | .12 | | | | | | | | | 77 | 4.71 | 1 | .06 | | |
| Consumption | 36 | 4.45 | 10 | 1.24 | 7 | .87 | 2 | 5.26 | | | 1 | 2.63 | 49 | 3.00 | 24 | 1.47 | 4 | .24 |
| Cancer | 1 | .12 | | | | | | | | | | | 3 | .18 | | | 1 | .06 |
| Syphilis and results | 142 | 17.57 | 13 | 1.61 | | | 19 | 50.00 | | | | | 157 | 9.60 | 14 | .86 | | |
| Gonorrhea and results | 488 | 60.38 | 2 | .25 | | | 52 | 136.84 | | | | | 838 | 51.23 | 1 | .06 | | |
| Chancroid and results | 305 | 37.74 | | | | | 8 | 21.05 | | | | | 833 | 50.93 | | | | |
| Infections, others | 34 | 4.21 | | | 1 | .12 | 1 | 2.63 | | | | | 7 | .43 | | | 2 | .12 |
| Total infectious diseases | 11,186 | 1,384.05 | 35 | 4.33 | 73 | 9.01 | 237 | 623.66 | | | 3 | 7.89 | 13,286 | 812.21 | 52 | 3.18 | 111 | 6.77 |
| Anæmia | 24 | 2.97 | 1 | .12 | | | | | | | | | 35 | 2.14 | | | | |
| Nutrition, others | 7 | .87 | 1 | .12 | 1 | .12 | 6 | 15.79 | | | | | 17 | 1.04 | 2 | .12 | 1 | .06 |
| Total diseases of nutrition | 31 | 3.84 | 2 | .24 | 1 | .12 | 6 | 15.79 | | | | | 52 | 3.18 | 2 | .12 | 1 | .06 |

TABLE V.—*Volunteer Army, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and the countries in which service was rendered*—Continued.

| | Cuba. | | | | | | Porto Rico. | | | | | | Pacific Islands. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 8,082. | | | | | | 380. | | | | | | 16,358. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Alcoholism | 142 | 17.57 | 2 | 0.25 | 3 | 0.37 | 17 | 44.74 | | | | | 76 | 4.65 | 1 | 0.06 | 2 | 0.12 |
| Brain and spinal cord | 46 | 5.69 | 1 | .12 | 2 | .25 | 2 | 5.26 | 1 | 2.63 | | | 48 | 2.93 | 8 | .49 | 2 | .12 |
| Insanity | 9 | 1.11 | 5 | .62 | | | | | | | | | 16 | .98 | 3 | .18 | | |
| Meningitis | 2 | .25 | | | 1 | .12 | | | | | | | 5 | .31 | 4 | .24 | 4 | .24 |
| Poisoning, narcotic | 3 | .37 | 1 | .12 | 1 | .12 | | | | | | | 4 | .24 | | | | |
| Nervous system, others | 195 | 24.13 | 3 | .37 | | | 10 | 26.32 | | | | | 511 | 31.24 | 7 | .43 | | |
| Total diseases of the nervous system | 397 | 49.12 | 12 | 1.48 | 7 | .86 | 29 | 76.32 | 1 | 2.63 | | | 660 | 40.35 | 23 | 1.40 | 8 | .48 |
| Poisoning, irritant | 10 | 1.24 | | | | | | | | | | | 20 | 1.22 | | | 1 | .06 |
| Tonsillitis, pharyngitis, and sore throat | 181 | 22.40 | | | | | 11 | 28.95 | | | | | 358 | 21.88 | | | 1 | .06 |
| Peritonitis | 5 | .62 | | | 2 | .25 | 1 | 2.63 | | | | | 14 | .86 | | | 4 | .24 |
| Dyspepsia, colic, and constipation | 765 | 94.66 | 2 | .25 | | | 21 | 55.26 | | | | | 881 | 53.86 | | | | |
| Gastritis | 167 | 20.66 | | | | | 11 | 28.95 | | | | | 684 | 41.81 | 3 | .18 | | |
| Diarrheal diseases | 3,014 | 372.93 | 2 | .25 | 19 | 2.35 | 72 | 189.47 | | | | | 8,558 | 523.17 | 23 | 1.41 | 49 | 3.00 |
| Enteritis | 74 | 9.16 | | | 3 | .37 | 2 | 5.26 | | | | | 209 | 12.78 | 1 | .06 | 3 | .18 |
| Perityphlitis and appendicitis | 18 | 2.23 | | | 1 | .12 | 1 | 2.63 | | | | | 41 | 2.51 | 1 | .06 | 2 | .12 |
| Digestive system, others | 271 | 33.53 | 7 | .87 | 1 | .12 | 9 | 23.68 | | | | | 476 | 29.10 | 1 | .06 | 5 | .31 |
| Total diseases of the digestive system | 4,505 | 557.42 | 11 | 1.37 | 26 | 3.21 | 128 | 336.83 | | | | | 11,241 | 687.19 | 29 | 1.77 | 65 | 3.97 |
| Heart, diseases of | 23 | 2.85 | 9 | 1.11 | 1 | .12 | 1 | 2.63 | | | | | 68 | 4.16 | 9 | .55 | 2 | .12 |
| Arteries and veins | 13 | 1.61 | 3 | .37 | | | 1 | 2.63 | | | | | 50 | 3.06 | 2 | .12 | 2 | .12 |
| Total diseases of the circulatory system | 36 | 4.46 | 12 | 1.48 | 1 | .12 | 2 | 5.26 | | | | | 118 | 7.22 | 11 | .67 | 4 | .24 |
| Bronchitis | 498 | 61.62 | 1 | .12 | | | 21 | 55.26 | | | | | 655 | 40.04 | 4 | .24 | | |
| Pneumonia | 51 | 6.31 | | | 11 | 1.36 | 2 | 5.26 | | | | | 48 | 2.93 | 1 | .06 | 1 | .06 |
| Pleurisy | 26 | 3.22 | | | | | 2 | 5.26 | | | | | 53 | 3.24 | | | | |
| Respiratory system, others | 347 | 42.94 | 2 | .25 | 1 | .12 | 16 | 42.10 | | | | | 204 | 12.47 | 1 | .06 | 1 | .06 |
| Total diseases of the respiratory organs | 922 | 114.09 | 3 | .37 | 12 | 1.48 | 41 | 107.88 | | | | | 955 | 58.38 | 6 | .36 | 2 | .12 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidneys, diseases of | 20 | 2.47 | 1 | .12 | 1 | 12 | 2 | 5.26 | | | | | 30 | 1.83 | 1 | .06 | 2 | .12 |
| Varicocele | 37 | 4.58 | 1 | .12 | | | 1 | 2.63 | | | | | 89 | 5.44 | 2 | .12 | | |
| Genito-urinary, others | 182 | 16.33 | 3 | .37 | | | 1 | 2.63 | | | | | 229 | 14.00 | 1 | .06 | | |
| Total diseases of the genito-urinary system | 189 | 23.38 | 5 | .61 | 1 | 12 | 4 | 10.52 | | | | | 348 | 21.27 | 4 | .24 | 2 | .12 |
| Adenitis | 33 | 4.08 | | | | | 5 | 13.16 | | | | | 93 | 5.69 | 1 | .06 | | |
| Lymphatic system, others | 1 | .12 | | | | | | | | | | | 19 | 1.16 | 1 | .06 | | |
| Total diseases of the lymphatic system | 34 | 4.20 | | | | | 5 | 13.16 | | | | | 112 | 6.85 | 2 | .12 | | |
| Rheumatism, muscular | 467 | 57.79 | 2 | .25 | | | 12 | 31.58 | | | | | 659 | 40.29 | 7 | .43 | | |
| Osteitis and periostitis | 9 | 1.11 | | | | | | | | | | | 21 | 1.28 | | | | |
| Arthritis and synovitis | 55 | 6.81 | | | | | 1 | 2.63 | | | | | 114 | 6.97 | 3 | .18 | | |
| Rheumatism, chronic articular | 105 | 12.99 | 3 | .37 | | | 1 | 2.63 | | | | | 203 | 12.41 | 9 | .55 | | |
| Muscles, bones, and joints, others | 15 | 1.86 | 1 | .12 | | | 1 | 2.63 | | | | | 32 | 1.96 | 6 | .37 | | |
| Total diseases of the muscles, bones, and joints | 651 | 80.56 | 6 | .74 | | | 15 | 39.47 | | | | | 1,029 | 62.91 | 25 | 1.53 | | |
| Total diseases of the integumentary system, all | 538 | 66.56 | | | | | 38 | 100.00 | | | | | 2,083 | 127.84 | 2 | .12 | | |
| Total diseases of the eye | 91 | 11.26 | | | | | 8 | 21.05 | | | | | 208 | 12.72 | 8 | .49 | | |
| Total diseases of the ear | 53 | 6.56 | 6 | .74 | | | 7 | 18.42 | | | | | 283 | 17.30 | 26 | 1.59 | | |
| Total diseases of the nose | 4 | .49 | | | | | | | | | | | 5 | .31 | | | | |
| Total unclassified | 46 | 5.69 | | | | | 13 | 34.21 | | | | | 33 | 2.02 | | | | |
| Total for diseases | 18,683 | 2,311.68 | 92 | 11.38 | 121 | 14.97 | 533 | 1,402.63 | 1 | 2.63 | 3 | 7.89 | 30,413 | 1,859.21 | 190 | 11.62 | 193 | 11.80 |
| Drowning | | | | | 2 | .25 | | | | | | | | | | | 15 | .92 |
| Exhaustion from exposure and fatigue | 10 | 1.24 | | | | | 1 | 2.63 | | | | | 656 | 40.10 | | | 1 | .06 |
| Heat stroke | 6 | .74 | | | | | | | | | | | 49 | 3.00 | 1 | .06 | | |
| Lightning | | | | | | | | | | | | | 2 | .12 | | | | |
| Venomous bites, stings, and wounds | 63 | 7.80 | | | | | 12 | 31.58 | | | | | 155 | 9.48 | | | | |
| Abrasions, blisters, burns, and scalds | 159 | 19.67 | | | | | 9 | 23.68 | | | | | 208 | 12.72 | | | | |
| Compression and concussion of brain | 2 | .25 | | | 1 | .12 | | | | | | | 5 | .31 | | | | |
| Contusions and sprains | 345 | 42.69 | | | | | 22 | 57.89 | | | | | 513 | 31.36 | 2 | .12 | | |
| Dislocations | 15 | 1.86 | | | | | 1 | 2.63 | | | | | 13 | .79 | | | | |
| Fractures (not shot) | 31 | 3.84 | 1 | .12 | 1 | .12 | 8 | 21.05 | | | | | 86 | 5.26 | 3 | .18 | | |
| Herniæ | 54 | 6.68 | 5 | .62 | | | 3 | 7.89 | 1 | 2.63 | | | 159 | 9.72 | 6 | .37 | | |
| Wounds, contused, lacerated, and punctured | 148 | 18.31 | | | | | 10 | 26.32 | | | | | 174 | 10.64 | 1 | .06 | | |
| Wounds, incised | 127 | 15.71 | | | 1 | .12 | 3 | 7.89 | | | 1 | 2.63 | 125 | 7.64 | | | 1 | .06 |
| Wounds, gunshot | 23 | 2.85 | 2 | .25 | 5 | .62 | 1 | 2.63 | | | | | 1,158 | 70.79 | 40 | 2.45 | 275 | 16.81 |
| Secondary results of injury | 15 | 1 86 | | | | | | | | | | | 22 | 1.34 | 1 | .06 | | |
| Other injuries | 53 | 6.56 | 1 | .12 | 2 | .25 | 1 | 2.63 | | | | | 52 | 3.18 | | | 3 | .18 |
| Total for injuries | 1,051 | 130.04 | 9 | 1.11 | 12 | 1.48 | 71 | 186.84 | 1 | 2.63 | 1 | 2.63 | 3,377 | 206.44 | 54 | 3.30 | 295 | 18.03 |
| Total for diseases and injuries | 19,734 | 2,441.72 | 101 | 12.50 | 133 | 16.46 | 604 | 1,589.47 | 2 | 5.26 | 4 | 10.53 | 33,790 | 2,065.65 | 244 | 14.92 | 488 | 29.83 |

TABLE V.—*Volunteer Army, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and the countries in which service was rendered*—Continued.

| | Total, islands. | | | | | | Total, United States. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 24,820. | | | | | | 15,984. | | | | | |
| | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| Causes of admission to sick report. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 6 | 0.24 | | | | | 8 | 0.50 | | | | |
| Measles | 710 | 28.21 | | | 5 | 0.20 | 523 | 32.72 | | | 4 | 0.25 |
| Smallpox | 162 | 6.53 | | | 57 | 2.30 | 48 | 3.00 | | | 2 | .12 |
| Vaccinia | 1,403 | 56.53 | | | 1 | .04 | 2,086 | 130.50 | | | | |
| Influenza | 169 | 6.81 | | | | | 3,058 | 191.26 | | | 4 | .25 |
| Dengue | 536 | 21.60 | | | | | 20 | 1.25 | | | | |
| Mumps | 427 | 17.20 | | | | | 305 | 19.08 | | | | |
| Diphtheria | 25 | 1.01 | | | 3 | .12 | 5 | .31 | | | 1 | .06 |
| Typhoid fever | 485 | 19.54 | 7 | 0.28 | 59 | 2.38 | 200 | 12.51 | 5 | 0.31 | 19 | 1.19 |
| Yellow fever | 4 | .16 | | | 1 | .04 | | | | | | |
| Cerebro-spinal fever | 3 | .12 | | | 5 | .20 | 8 | .50 | | | 3 | .19 |
| Malarial fever, intermittent | 9,601 | 386.83 | 4 | .16 | | | 2,174 | 136.01 | | | | |
| Malarial fever, remittent | 6,937 | 279.49 | 5 | .20 | 4 | .16 | 504 | 31.53 | | | 2 | .12 |
| Malarial fever, pernicious | 46 | 1.85 | | | 25 | 1.01 | 7 | .44 | | | 4 | .25 |
| Malarial cachexia | 382 | 15.39 | 5 | .20 | 8 | .32 | 65 | 4.07 | 4 | .25 | | |
| Fever, undetermined | 721 | 29.05 | | | | | 174 | 10.89 | | | | |
| Erysipelas | 14 | .56 | | | 2 | .08 | 9 | .56 | | | | |
| Septicæmia and tetanus | 5 | .20 | | | 1 | .04 | | | | | | |
| Rheumatic fever | 98 | 3.95 | 2 | .08 | | | 31 | 1.94 | 1 | .06 | | |
| Consumption | 87 | 3.51 | 34 | 1.37 | 12 | .48 | 29 | 1.81 | 7 | .44 | 4 | .25 |
| Cancer | 4 | .16 | | | 1 | .04 | 1 | .06 | | | | |
| Syphilis and results | 318 | 12.81 | 27 | 1.09 | | | 206 | 12.89 | 25 | 1.56 | | |
| Gonorrhea and results | 1,378 | 55.52 | 3 | .12 | | | 1,071 | 67.01 | 12 | .75 | | |
| Chancroid and results | 1,146 | 46.17 | | | | | 468 | 29.28 | 2 | .12 | | |
| Infections, others | 42 | 1.69 | | | 8 | .12 | 40 | 2.50 | 2 | .12 | | |
| Total infectious diseases | 24,709 | 999.53 | 87 | 3.51 | 187 | 7.53 | 11,040 | 690.62 | 58 | 3.61 | 43 | 2.68 |
| Anæmia | 59 | 2.38 | 1 | .04 | | | 82 | 5.13 | 6 | .38 | | |
| Nutrition, others | 30 | 1.21 | 3 | .12 | 2 | .08 | 26 | 1.63 | 2 | .12 | | |
| Total diseases of nutrition | 89 | 3.59 | 4 | .16 | 2 | .08 | 108 | 6.76 | 8 | .50 | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alcoholism | 235 | 9.47 | 3 | .12 | 5 | .20 | 87 | 5.44 | ...... | ...... | ...... | ...... |
| Brain and spinal cord | 96 | 3.87 | 10 | .40 | 4 | .16 | 57 | 3.57 | 2 | .12 | ...... | ...... |
| Insanity | 25 | 1.01 | 8 | .32 | ...... | ...... | 13 | .81 | 11 | .69 | ...... | ...... |
| Meningitis | 7 | .28 | 4 | .16 | 5 | .20 | 16 | 1.00 | ...... | ...... | 6 | .38 |
| Poisoning, narcotic | 7 | .28 | 1 | .04 | 1 | .04 | 4 | .25 | ...... | ...... | 1 | .06 |
| Nervous system, others | 716 | 28.85 | 10 | .40 | ...... | ...... | 316 | 19.77 | 6 | .38 | ...... | ...... |
| Total diseases of the nervous system | 1,086 | 43.75 | 36 | 1.45 | 15 | .60 | 493 | 30.84 | 19 | 1.19 | 7 | .44 |
| Poisoning, irritant | 30 | 1.21 | ...... | ...... | 1 | .04 | 74 | 4.63 | ...... | ...... | 1 | .06 |
| Tonsillitis, pharyngitis, and sore throat | 550 | 22.16 | ...... | ...... | 1 | .04 | 798 | 49.93 | ...... | ...... | ...... | ...... |
| Peritonitis | 20 | .81 | ...... | ...... | 6 | .24 | 3 | .19 | ...... | ...... | ...... | ...... |
| Dyspepsia, colic, and constipation | 1,667 | 67.16 | 2 | .08 | ...... | ...... | 1,095 | 68.51 | 1 | .06 | ...... | ...... |
| Gastritis | 862 | 34.73 | 3 | .12 | ...... | ...... | 203 | 12.70 | 2 | .12 | ...... | ...... |
| Diarrheal diseases | 11,644 | 469.14 | 25 | 1.01 | 68 | 2.74 | 1,658 | 103.73 | 3 | .19 | 6 | .38 |
| Enteritis | 285 | 11.48 | 1 | .04 | 6 | .24 | 69 | 4.32 | 1 | .06 | ...... | ...... |
| Perityphlitis and appendicitis | 60 | 2.42 | 1 | .04 | 3 | .12 | 34 | 2.13 | ...... | ...... | ...... | ...... |
| Digestive system, others | 756 | 30.46 | 8 | .32 | 6 | .24 | 530 | 33.16 | 11 | .69 | 1 | .06 |
| Total diseases of the digestive system | 15,874 | 639.57 | 40 | 1.61 | 91 | 3.67 | 4,464 | 279.27 | 18 | 1.12 | 8 | .50 |
| Heart, diseases of | 92 | 3.71 | 18 | .73 | 3 | .12 | 48 | 3.00 | 6 | .38 | ...... | ...... |
| Arteries and veins | 64 | 2.58 | 5 | .20 | 2 | .08 | 32 | 2.00 | 4 | .25 | ...... | ...... |
| Total diseases of the circulatory system | 156 | 6.28 | 23 | .93 | 5 | .20 | 80 | 5.00 | 10 | .63 | ...... | ...... |
| Bronchitis | 1,174 | 47.30 | 5 | .20 | ...... | ...... | 2,158 | 135.01 | 3 | .19 | ...... | ...... |
| Pneumonia | 96 | 3.87 | 1 | .04 | 12 | .48 | 211 | 13.20 | 2 | .12 | 38 | 2.38 |
| Pleurisy | 81 | 3.26 | ...... | ...... | ...... | ...... | 51 | 3.19 | 2 | .12 | ...... | ...... |
| Respiratory system, others | 567 | 22.85 | 3 | .12 | 2 | .08 | 1,187 | 74.26 | 1 | .06 | 1 | .06 |
| Total diseases of the respiratory organs | 1,918 | 77.28 | 9 | .36 | 14 | .56 | 3,607 | 225.66 | 8 | .49 | 39 | 2.40 |
| Kidneys, diseases of | 52 | 2.10 | 2 | .08 | 3 | .12 | 16 | 1.00 | 1 | .06 | 4 | .25 |
| Varicocele | 127 | 5.12 | 3 | .12 | ...... | ...... | 87 | 2.31 | 2 | .12 | ...... | ...... |
| Genito-urinary, others | 362 | 14.59 | 4 | .16 | ...... | ...... | 190 | 11.89 | 6 | .38 | ...... | ...... |
| Total diseases of the genito-urinary system | 541 | 21.80 | 9 | .36 | 3 | .12 | 243 | 15.20 | 9 | .56 | 4 | .25 |
| Adenitis | 131 | 5.28 | 1 | .04 | ...... | ...... | 69 | 4.32 | ...... | ...... | ...... | ...... |
| Lymphatic system, others | 20 | .81 | 1 | .04 | ...... | ...... | 8 | .50 | ...... | ...... | ...... | ...... |
| Total diseases of the lymphatic system | 151 | 6.08 | 2 | .08 | ...... | ...... | 77 | 4.82 | ...... | ...... | ...... | ...... |
| Rheumatism, muscular | 1,138 | 45.85 | 9 | .36 | ...... | ...... | 900 | 56.31 | 12 | .75 | ...... | ...... |
| Osteitis and periostitis | 30 | 1.21 | ...... | ...... | ...... | ...... | 25 | 1.56 | 3 | .19 | ...... | ...... |
| Arthritis and synovitis | 170 | 6.85 | 3 | .12 | ...... | ...... | 94 | 5.88 | 2 | .12 | ...... | ...... |
| Rheumatism, chronic articular | 309 | 12.45 | 12 | .48 | ...... | ...... | 117 | 7.32 | 13 | .81 | ...... | ...... |
| Muscles, bones, and joints, others | 48 | 1.93 | 7 | .28 | ...... | ...... | 37 | 2.31 | ...... | ...... | ...... | ...... |
| Total diseases of the muscles, bones, and joints | 1,695 | 68.30 | 31 | 1.25 | ...... | ...... | 1,173 | 73.38 | 30 | 1.87 | ...... | ...... |

TABLE V.—*Volunteer Army, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by arms of the service and the countries in which service was rendered*—Continued.

| | Total, islands. | | | | | | Total, United States. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 24,820. | | | | | | 15,984. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total diseases of the integumentary system, all | 2,659 | 107.14 | 2 | 0.08 | | | 800 | 50.05 | | | | |
| Total diseases of the eye | 307 | 12.37 | 8 | .32 | | | 156 | 9.76 | 2 | 0.12 | | |
| Total diseases of the ear | 343 | 13.82 | 32 | 1.29 | | | 106 | 6.63 | 4 | .25 | | |
| Total diseases of the nose | 9 | .36 | | | | | 37 | 2.31 | 1 | .06 | | |
| Total unclassified | 92 | 3.71 | | | | | 110 | 6.88 | | | | |
| Total for diseases | 49,629 | 1,999.57 | 283 | 11.40 | 317 | 12.77 | 22,494 | 1,407.28 | 167 | 10.45 | 101 | 6.32 |
| Drowning | | | | | 17 | .68 | | | | | 2 | .12 |
| Exhaustion from exposure and fatigue | 667 | 26.88 | | | 1 | .04 | 45 | 2.81 | | | | |
| Heat stroke | 55 | 2.22 | 1 | .04 | | | 6 | .38 | | | | |
| Lightning | 2 | .08 | | | | | | | | | | |
| Venomous bites, stings, and wounds | 230 | 9.27 | | | | | 46 | 2.88 | | | | |
| Abrasions, blisters, burns, and scalds | 376 | 15.15 | | | | | 224 | 14.01 | | | | |
| Compression and concussion of brain | 7 | .28 | | | 1 | .04 | 2 | .12 | | | | |
| Contusions and sprains | 880 | 35.45 | 2 | .08 | | | 722 | 45.17 | 2 | .12 | | |
| Dislocations | 29 | 1.17 | | | | | 37 | 2.31 | | | | |
| Fractures (not shot) | 125 | 5.04 | 4 | .16 | 1 | .04 | 78 | 4.88 | 4 | .25 | 1 | .06 |
| Herniæ | 216 | 8.70 | 12 | .48 | | | 101 | 6.32 | 17 | 1.06 | | |
| Wounds, contused, lacerated, and punctured | 332 | 13.38 | 1 | .04 | | | 239 | 14.95 | | | 1 | .06 |
| Wounds, incised | 255 | 10.27 | | | 3 | .12 | 166 | 10.38 | | | | |
| Wounds, gunshot | 1,182 | 47.62 | 42 | 1.69 | 280 | 11.28 | 77 | 4.82 | 8 | .50 | 10 | .62 |
| Secondary results of injury | 37 | 1.49 | 1 | .04 | | | 27 | 1.69 | 4 | .25 | | |
| Other injuries | 106 | 4.27 | 1 | .04 | 5 | .20 | 69 | 4.32 | 1 | .06 | 1 | .06 |
| Total for injuries | 4,499 | 181.27 | 64 | 2.58 | 308 | 12.41 | 1,839 | 115.05 | 36 | 2.25 | 15 | .94 |
| Total for diseases and injuries | 54,128 | 2,180.87 | 347 | 13.98 | 625 | 25.18 | 24,333 | 1,522.33 | 203 | 12.70 | 116 | 7.26 |

TABLE VI.—*Armies, regular and volunteer, 1899—Admissions to sick report, discharges, and deaths, with their ratios per thousand of mean strength, arranged by arms of the service.*

| | Cavalry. | | | | | | Artillery. | | | | | | Infantry. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 11,870. | | | | | | 11,238. | | | | | | 71,750. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | ..... | ....... | ..... | ....... | ..... | ....... | ..... | ....... | ..... | ....... | ..... | ....... | 15 | 0.21 | ..... | ....... | ..... | ....... |
| Measles | 127 | 10.70 | ..... | ....... | 2 | 0.17 | 266 | 23.67 | ..... | ....... | 1 | 0.09 | 1,995 | 27.80 | 1 | 0.01 | 17 | 0.24 |
| Smallpox | 8 | .67 | ..... | ....... | 1 | .08 | 27 | 2.40 | ..... | ....... | 3 | .27 | 302 | 4.21 | ..... | ....... | 79 | 1.10 |
| Vaccinia | 467 | 39.34 | ..... | ....... | ..... | ....... | 583 | 51.88 | ..... | ....... | ..... | ....... | 5,378 | 74.95 | 1 | .01 | 1 | .01 |
| Influenza | 496 | 41.79 | ..... | ....... | ..... | ....... | 553 | 49.21 | ..... | ....... | ..... | ....... | 4,129 | 57.55 | ..... | ....... | 4 | .06 |
| Dengue | 268 | 22.58 | ..... | ....... | ..... | ....... | 118 | 10.50 | ..... | ....... | ..... | ....... | 1,127 | 15.71 | ..... | ....... | ..... | ....... |
| Mumps | 112 | 9.44 | ..... | ....... | ..... | ....... | 92 | 8.19 | ..... | ....... | ..... | ....... | 1,510 | 21.05 | ..... | ....... | ..... | ....... |
| Diphtheria | 4 | .34 | ..... | ....... | ..... | ....... | 6 | .53 | ..... | ....... | ..... | ....... | 38 | .53 | ..... | ....... | 5 | .07 |
| Typhoid fever | 432 | 36.40 | 3 | 0.25 | 44 | 3.71 | 208 | 18.51 | 1 | 0.09 | 26 | 2.31 | 1,371 | 19.11 | 20 | .28 | 171 | 2.38 |
| Yellow fever | 26 | 2.19 | ..... | ....... | 8 | .67 | 34 | 3.03 | ..... | ....... | 7 | .62 | 170 | 2.37 | ..... | ....... | 31 | .43 |
| Cerebro-spinal fever | 8 | .67 | ..... | ....... | 4 | .34 | 2 | .18 | ..... | ....... | 3 | .27 | 47 | .66 | 2 | .03 | 30 | .42 |
| Malarial fever, intermittent | 7,320 | 616.68 | 1 | .08 | ..... | ....... | 2,967 | 264.02 | ..... | ....... | ..... | ....... | 29,293 | 408.26 | 2 | .03 | ..... | ....... |
| Malarial fever, remittent | 1,831 | 154.26 | 1 | .08 | 2 | .17 | 1,113 | 99.04 | ..... | ....... | ..... | ....... | 13,514 | 188.34 | 6 | .08 | 12 | .17 |
| Malarial fever, pernicious | 31 | 2.61 | ..... | ....... | 4 | .34 | 3 | .27 | ..... | ....... | 2 | .18 | 109 | 1.52 | ..... | ....... | 52 | .72 |
| Malarial cachexia | 276 | 23.25 | 10 | .84 | 3 | .25 | 117 | 10.41 | 5 | .44 | ..... | ....... | 1,437 | 20.03 | 79 | 1.10 | 16 | .22 |
| Fever, undetermined | 412 | 34.71 | ..... | ....... | ..... | ....... | 167 | 14.86 | ..... | ....... | ..... | ....... | 1,929 | 26.88 | ..... | ....... | ..... | ....... |
| Erysipelas | 18 | 1.10 | ..... | ....... | ..... | ....... | 12 | 1.07 | ..... | ....... | 1 | .09 | 57 | .79 | ..... | ....... | 3 | .04 |
| Septicæmia and tetanus | 3 | .25 | ..... | ....... | 2 | .17 | 4 | .36 | ..... | ....... | ..... | ....... | 14 | .20 | 1 | .01 | 5 | .07 |
| Rheumatic fever | 79 | 6.66 | 2 | .17 | ..... | ....... | 61 | 5.43 | 2 | .18 | 1 | .09 | 487 | 6.79 | 4 | .06 | 1 | ·01 |
| Consumption | 42 | 3.54 | 27 | 2.27 | 1 | .08 | 61 | 5.43 | 39 | 3.47 | 4 | .36 | 268 | 3.74 | 99 | 1.38 | 51 | .71 |
| Cancer | 5 | .42 | 1 | .08 | ..... | ....... | 5 | .44 | 2 | .18 | ..... | ....... | 9 | .13 | 1 | .01 | 2 | .03 |
| Syphilis and results | 223 | 18.79 | 29 | 2.44 | ..... | ....... | 233 | 20.73 | 37 | 3.29 | ..... | ....... | 942 | 13.13 | 118 | 1.64 | ..... | ....... |
| Gonorrhea and results | 1,415 | 119.21 | 9 | .76 | ..... | ....... | 1,400 | 124.58 | 12 | 1.07 | ..... | ....... | 5,080 | 70.80 | 30 | .42 | 1 | .01 |
| Chancroid and results | 545 | 45.92 | 2 | .17 | ..... | ....... | 459 | 40.84 | 1 | .09 | ..... | ....... | 2,898 | 40.39 | 8 | .11 | ..... | ....... |
| Infections, others | 66 | 5.56 | 1 | .08 | 1 | .08 | 14 | 1.25 | 1 | .09 | ..... | ....... | 181 | 2.52 | 4 | .06 | 3 | .04 |
| Total infectious diseases | 14,209 | 1,197.08 | 86 | 7.25 | 72 | 6.07 | 8,505 | 756.83 | 100 | 8.90 | 48 | 4.28 | 72,300 | 1,007.67 | 376 | 5.23 | 484 | 6.73 |
| Anæmia | 64 | 5.39 | 1 | .08 | ..... | ....... | 22 | 1.96 | 1 | .09 | ..... | ....... | 386 | 5.38 | 11 | .15 | 1 | .01 |
| Nutrition, others | 23 | 1.94 | 4 | .34 | ..... | ....... | 9 | .80 | 1 | .09 | ..... | ....... | 78 | 1.09 | 14 | .20 | 4 | .06 |
| Total diseases of nutrition | 87 | 7.33 | 5 | .42 | ..... | ....... | 31 | 2.76 | 2 | .18 | ..... | ....... | 464 | 6.47 | 25 | .35 | 5 | .07 |

TABLE VI.—*Armies, regular and volunteer, 1899—Admissions to sick report, discharges, and deaths, with their ratios per thousand of mean strength, arranged by arms of the service*—Continued.

| | Cavalry. | | | | | | Artillery. | | | | | | Infantry. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 11,870. | | | | | | 11,238. | | | | | | 71,750. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Alcoholism | 150 | 12.64 | | | 6 | 0.51 | 292 | 25.98 | | | 1 | 0.09 | 931 | 12.98 | 5 | 0.07 | 19 | 0.26 |
| Brain and spinal cord | 143 | 12.05 | 15 | 1.26 | 4 | .34 | 72 | 6.41 | 12 | 1.07 | 2 | .18 | 390 | 5.44 | 65 | .91 | 10 | .14 |
| Insanity | 22 | 1.85 | 9 | .76 | | | 19 | 1.69 | 11 | .98 | | | 122 | 1.70 | 57 | .79 | | |
| Meningitis | 2 | .17 | | | | | 5 | .44 | 1 | .09 | 2 | .18 | 31 | .43 | 5 | .07 | 14 | .20 |
| Poisoning, narcotic | 6 | .51 | 1 | .08 | 1 | .08 | 7 | .62 | | | 1 | .09 | 25 | .35 | 1 | .01 | 10 | .14 |
| Nervous system, others | 411 | 34.63 | 15 | 1.26 | | | 305 | 27.14 | 10 | .89 | | | 1,769 | 24.65 | 42 | .59 | 3 | .04 |
| Total diseases of the nervous system | 734 | 61.85 | 40 | 3.37 | 11 | .93 | 700 | 62.28 | 34 | 3.03 | 6 | .54 | 3,268 | 45.55 | 175 | 2.44 | 56 | .78 |
| Poisoning, irritant | 23 | 1.94 | | | | | 11 | .98 | | | | | 174 | 2.42 | | | 6 | .08 |
| Tonsillitis, pharyngitis, and sore throat | 1,031 | 86.87 | | | | | 720 | 64.07 | | | 1 | .09 | 2,944 | 41.03 | | | 1 | .01 |
| Peritonitis | 7 | .59 | | | 1 | .08 | 6 | .53 | | | 1 | .09 | 31 | .43 | | | 9 | .13 |
| Dyspepsia, colic, and constipation | 1,332 | 112.22 | 1 | .08 | | | 1,023 | 91.04 | 2 | .18 | | | 5,212 | 72.64 | 7 | .10 | | |
| Gastritis | 280 | 23.59 | | | | | 255 | 22.69 | | | | | 2,216 | 30.88 | 8 | .11 | 5 | .07 |
| Diarrheal diseases | 4,363 | 367.57 | 8 | .67 | 10 | .84 | 3,230 | 287.42 | 8 | .71 | 4 | .36 | 31,107 | 433.55 | 75 | 1.05 | 204 | 2.84 |
| Enteritis | 89 | 7.50 | | | | | 206 | 18.33 | 1 | .09 | 4 | .36 | 743 | 10.36 | 5 | .07 | 16 | .22 |
| Perityphlitis and appendicitis | 36 | 3.03 | 3 | .25 | 2 | .17 | 24 | 2.14 | 2 | .18 | 1 | .09 | 161 | 2.24 | 3 | .04 | 12 | .17 |
| Digestive system, others | 540 | 45.49 | 3 | .25 | 2 | .17 | 489 | 43.51 | 6 | .53 | 3 | .27 | 2,328 | 32.45 | 33 | .46 | 16 | .22 |
| Total diseases of the digestive system | 7,701 | 648.80 | 15 | 1.26 | 15 | 1.26 | 5,964 | 530.71 | 19 | 1.69 | 14 | 1.26 | 44,916 | 626.00 | 131 | 1.83 | 269 | 3.74 |
| Heart, diseases of | 95 | 8.00 | 27 | 2.27 | 6 | .51 | 65 | 5.78 | 15 | 1.33 | 5 | .44 | 360 | 5.02 | 86 | 1.20 | 16 | .22 |
| Arteries and veins | 29 | 2.44 | 6 | .51 | 1 | .08 | 31 | 2.76 | 2 | .18 | | | 173 | 2.41 | 22 | .31 | 4 | .06 |
| Total diseases of the circulatory system | 124 | 10.44 | 33 | 2.78 | 7 | .59 | 96 | 8.54 | 17 | 1.51 | 5 | .44 | 533 | 7.43 | 108 | 1.51 | 20 | .28 |
| Bronchitis | 1,216 | 102.44 | 1 | .08 | | | 1,132 | 100.72 | 1 | .09 | | | 5,438 | 75.79 | 10 | .14 | | |
| Pneumonia | 72 | 6.07 | | | 8 | .67 | 42 | 3.74 | | | 5 | .44 | 447 | 6.23 | 9 | .13 | 75 | 1.05 |
| Pleurisy | 52 | 4.38 | | | | | 61 | 5.43 | 2 | .18 | | | 268 | 3.74 | 6 | .08 | 2 | .03 |
| Respiratory system, others | 428 | 36.06 | 2 | .17 | | | 629 | 55.97 | 11 | .98 | 1 | .09 | 2,563 | 35.72 | 9 | .13 | 8 | .11 |
| Total diseases of the respiratory organs | 1,768 | 148.95 | 3 | .25 | 8 | .67 | 1,864 | 165.86 | 14 | 1.25 | 6 | .53 | 8,716 | 121.48 | 34 | .48 | 85 | 1.19 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidneys, diseases of | 27 | 2.27 | 5 | .42 | 3 | .25 | 25 | 2.22 | 1 | .09 | 1 | .09 | 168 | 2.34 | 8 | .11 | 21 | .29 |
| Varicocele | 74 | 6.23 | 4 | .34 | | | 58 | 5.16 | 3 | .27 | | | 267 | 3.72 | 10 | .14 | | |
| Genito-urinary, others | 228 | 19.21 | 4 | .34 | | | 166 | 14.77 | 4 | .36 | | | 945 | 13.17 | 18 | .25 | | |
| Total diseases of the genito-urinary system | 329 | 27.71 | 13 | 1.10 | 3 | .25 | 249 | 22.15 | 8 | .72 | 1 | .09 | 1,380 | 19.23 | 36 | .50 | 21 | .29 |
| Adenitis | 126 | 10.61 | 1 | .08 | | | 115 | 10.23 | | | | | 412 | 5.74 | 1 | .01 | | |
| Lymphatic system, others | 27 | 2.27 | 3 | .25 | | | 7 | .62 | | | | | 54 | .75 | 1 | .01 | | |
| Total diseases of the lymphatic system | 153 | 12.88 | 4 | .33 | | | 122 | 10.85 | | | | | 466 | 6.49 | 2 | .02 | | |
| Rheumatism, muscular | 822 | 69.26 | 6 | .51 | | | 666 | 59.26 | 6 | .53 | | | 3,746 | 52.21 | 39 | .54 | | |
| Osteitis and periostitis | 33 | 2.78 | | | | | 26 | 2.31 | 3 | .27 | | | 127 | 1.77 | 4 | .06 | | |
| Arthritis and synovitis | 131 | 11.04 | 2 | .17 | | | 90 | 8.01 | 1 | .09 | | | 607 | 8.46 | 14 | .20 | | |
| Rheumatism, chronic articular | 76 | 6.40 | 16 | 1.35 | | | 59 | 5.25 | 5 | .44 | | | 739 | 10.30 | 66 | .92 | | |
| Muscles, bones, and joints, others | 66 | 5.56 | 9 | .76 | | | 61 | 5.43 | 7 | .62 | | | 182 | 2.54 | 30 | .42 | | |
| Total diseases of the muscles, bones, and joints | 1,128 | 93.04 | 33 | 2.79 | | | 902 | 80.26 | 22 | 1.95 | | | 5,401 | 75.28 | 153 | 2.14 | | |
| Total diseases of the integumentary system, all | 2,021 | 170.26 | 3 | .25 | | | 1,618 | 143.98 | 10 | .89 | | | 8,844 | 123.26 | 6 | .08 | 1 | .01 |
| Total diseases of the eye | 214 | 18.03 | 11 | .93 | | | 190 | 16.91 | 11 | .98 | | | 882 | 12.29 | 36 | .50 | | |
| Total diseases of the ear | 170 | 14.32 | 12 | 1.01 | | | 165 | 14.68 | 10 | .89 | | | 926 | 12.91 | 62 | .86 | | |
| Total diseases of the nose | 31 | 2.61 | 1 | .08 | | | 27 | 2.40 | | | | | 78 | 1.09 | 2 | .03 | | |
| Total unclassified | 284 | 23.93 | 1 | .08 | | | 53 | 4.72 | | | | | 407 | 5.67 | | | 1 | .01 |
| Total for diseases | 28,953 | 2,439 18 | 260 | 21.90 | 116 | 9.77 | 20,486 | 1,822.92 | 247 | 21.98 | 80 | 7.12 | 148,581 | 2,070.82 | 1,146 | 15.97 | 942 | 13.13 |
| Drowning | | | | | 11 | .93 | | | | | 8 | .71 | | | | | 78 | 1.09 |
| Exhaustion from exposure and fatigue | 76 | 6.40 | | | | | 85 | 7.56 | | | | | 1,269 | 17.69 | | | 3 | .04 |
| Heat stroke | 10 | .84 | | | | | 20 | 1.78 | | | | | 166 | 2.31 | 2 | .03 | | |
| Lightning | 2 | .17 | | | 2 | .17 | | | | | | | 4 | .06 | 1 | .01 | | |
| Venomous bites, stings, and wounds | 141 | 11.88 | | | | | 126 | 11.21 | | | | | 541 | 7.54 | | | | |
| Abrasions, blisters, burns, and scalds | 277 | 23.34 | | | | | 267 | 23.76 | | | | | 1,085 | 15.12 | | | | |
| Compression and concussion of brain | 9 | .76 | 1 | .08 | | | 8 | .71 | | | | | 15 | .21 | | | 3 | .04 |
| Contusions and sprains | 2,230 | 187.88 | 4 | .34 | | | 1,226 | 109.10 | | | | | 3,314 | 46.19 | 7 | .10 | | |
| Dislocations | 43 | 3.62 | | | | | 44 | 3.92 | 1 | .09 | | | 141 | 1.97 | 2 | .03 | | |
| Fractures (not shot) | 157 | 13.23 | 6 | .51 | 3 | .25 | 123 | 10.94 | 9 | .80 | 3 | .27 | 352 | 4.91 | 21 | .29 | 5 | .07 |
| Herniæ | 63 | 5.31 | 16 | 1.35 | | | 96 | 8.54 | 16 | 1.42 | | | 584 | 8.14 | 84 | 1.17 | 1 | .01 |
| Wounds, contused, lacerated, and punctured | 613 | 51.64 | | | | | 481 | 42.80 | | | | | 1,175 | 16.68 | 2 | .03 | 2 | .03 |
| Wounds, incised | 214 | 18.03 | 1 | .08 | | | 200 | 17.80 | | | 1 | .09 | 838 | 11.61 | 5 | .07 | 19 | .26 |
| Wounds, gunshot | 133 | 11.20 | 23 | 1.94 | 37 | 3.12 | 156 | 13.88 | 13 | 1.16 | 35 | 3.11 | 1,942 | 27.07 | 187 | 2.61 | 453 | 6.31 |
| Secondary results of injury | 86 | 7.25 | 11 | .93 | | | 39 | 3.47 | 4 | .36 | | | 222 | 3.09 | 18 | .25 | 1 | .01 |
| Other injuries | 206 | 17.35 | 4 | .34 | 1 | .08 | 157 | 13.98 | 3 | .27 | 2 | .18 | 405 | 5.64 | 9 | .13 | 13 | .18 |
| Total for injuries | 4,260 | 358.89 | 66 | 5.56 | 54 | 4.55 | 3,028 | 269.45 | 46 | 4.09 | 49 | 4.36 | 12,048 | 167.92 | 338 | 4.71 | 578 | 8.06 |
| Total for diseases and injuries | 33,213 | 2,798.06 | 326 | 27.46 | 170 | 14.32 | 23,514 | 2,092.37 | 293 | 26.07 | 129 | 11.48 | 160,629 | 2,238.73 | 1,484 | 20.68 | 1,520 | 21.19 |

TABLE VI.—*Armies, regular and volunteer, 1899—Admissions to sick report, discharges, and deaths, with their ratios per thousand of mean strength, arranged by arms of the service*—Continued.

| | Engineers. | | | | | | Ordnance. | | | | | | Signal Corps. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 1,363. | | | | | | 740. | | | | | | 719. | | | | | |
| | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| Causes of admission to sick report. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Measles | 21 | 15.41 | | | 1 | 0.73 | | | | | | | 10 | 13.91 | | | | |
| Smallpox | 1 | .73 | | | | | | | | | | | 1 | 1.39 | | | | |
| Vaccinia | 63 | 46.23 | | | | | 7 | 9.46 | | | | | 11 | 15.30 | | | | |
| Influenza | 114 | 83.64 | | | | | 71 | 95.94 | | | | | 1 | 1.39 | | | | |
| Dengue | 17 | 12.47 | | | | | | | | | | | 6 | 8.34 | | | | |
| Mumps | 8 | 5.87 | | | | | 1 | 1.35 | | | | | 3 | 4.17 | | | | |
| Typhoid fever | 16 | 11.74 | | | | | 2 | 2.70 | | | | | 28 | 38.94 | | | | |
| Yellow fever | 1 | .73 | | | 1 | .73 | 1 | 1.35 | | | 1 | 1.35 | 5 | 6.95 | | | 2 | 2.78 |
| Cerebro-spinal fever | | | | | | | | | | | | | 1 | 1.39 | | | | |
| Malarial fever, intermittent | 485 | 355.86 | 1 | 0.73 | | | 77 | 104.05 | | | | | 110 | 152.99 | | | | |
| Malarial fever, remittent | 113 | 82.91 | | | 1 | .73 | 8 | 10.81 | | | | | 95 | 132.18 | | | | |
| Malarial fever, pernicious | | | | | | | 1 | 1.35 | | | | | 4 | 5.56 | | | | |
| Malarial cachexia | 84 | 61.63 | 1 | .73 | | | 6 | 8.11 | | | | | 7 | 9.74 | | | | |
| Fever, undetermined | 61 | 44.76 | | | | | 3 | 4.05 | | | | | 8 | 4.17 | | | | |
| Erysipelas | 1 | .73 | | | | | 1 | 1.35 | | | | | | | | | | |
| Septicæmia and tetanus | 2 | 1.47 | | | | | | | | | | | | | | | | |
| Rheumatic fever | 3 | 2.20 | | | | | 4 | 5.41 | | | | | | | | | | |
| Consumption | 7 | 5.14 | 3 | 2.20 | 1 | .73 | | | | | | | 3 | 4.17 | 1 | 1.39 | | |
| Cancer | | | | | | | 1 | 1.35 | | | 1 | 1.35 | 1 | 1.39 | | | | |
| Syphilis and results | 13 | 9.54 | | | | | 1 | 1.35 | | | | | 4 | 5.56 | 1 | 1.39 | | |
| Gonorrhea and results | 79 | 57.97 | | | | | 15 | 20.27 | | | | | 33 | 45.90 | 1 | 1.39 | | |
| Chancroid and results | 37 | 27.15 | | | | | | | | | | | 25 | 34.77 | | | | |
| Infections, others | 3 | 2.20 | | | | | 2 | 2.70 | | | | | | | | | | |
| Total infectious diseases | 1,129 | 828.33 | 5 | 3.66 | 4 | 2.92 | 201 | 271.60 | | | 2 | 2.70 | 351 | 488.16 | 3 | 4.17 | 2 | 2.78 |
| Anæmia | 1 | .73 | | | | | 2 | 2.70 | | | | | | | | | | |
| Nutrition, others | 7 | 5.14 | 1 | .73 | | | | | | | | | 1 | 1.39 | | | | |
| Total diseases of nutrition | 8 | 5.87 | 1 | .73 | | | 2 | 2.70 | | | | | 1 | 1.39 | | | | |
| Alcoholism | 32 | 23.48 | | | | | 10 | 13.51 | | | 1 | 1.35 | 16 | 22.25 | | | | |
| Brain and spinal cord | 7 | 5.14 | | | | | 8 | 10.81 | | | | | 1 | 1.39 | | | 1 | 1.39 |
| Insanity | | | 1 | .73 | | | 1 | 1.35 | 1 | 1.35 | | | | | | | | |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Meningitis | 1 | .73 | .... | .... | 1 | .73 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Poisoning, narcotic | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1.39 | .... | .... | .... | .... |
| Nervous system, others | 45 | 33.02 | .... | .... | .... | .... | 18 | 24.82 | .... | .... | .... | .... | 9 | 12.52 | .... | .... | .... | .... |
| Total diseases of the nervous system | 85 | 62.37 | 1 | .73 | 1 | .73 | 37 | 49.99 | 1 | 1.35 | 1 | 1.35 | 27 | 37.55 | .... | .... | 1 | 1.39 |
| Poisoning, irritant | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | 2.78 | .... | .... | .... | .... |
| Tonsillitis, pharyngitis, and sore throat | 64 | 46.96 | .... | .... | .... | .... | 40 | 54.05 | .... | .... | .... | .... | 10 | 13.91 | .... | .... | .... | .... |
| Peritonitis | 3 | 2.20 | .... | .... | 2 | 1.47 | 1 | 1.35 | .... | .... | 1 | 1.35 | .... | .... | .... | .... | .... | .... |
| Dyspepsia, colic, and constipation | 139 | 101.98 | 1 | .73 | .... | .... | 29 | 39.19 | .... | .... | .... | .... | 16 | 22.25 | .... | .... | .... | .... |
| Gastritis | 18 | 13.21 | .... | .... | .... | .... | 13 | 17.57 | .... | .... | .... | .... | 18 | 25.04 | .... | .... | 1 | 1.39 |
| Diarrheal diseases | 386 | 283.20 | 1 | .73 | 1 | .73 | 74 | 100.00 | .... | .... | .... | .... | 262 | 364.40 | .... | .... | 1 | 1.39 |
| Enteritis | 4 | 2.93 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 44 | 61.20 | .... | .... | .... | .... |
| Perityphlitis and appendicitis | 4 | 2.93 | .... | .... | .... | .... | 5 | 6.76 | .... | .... | .... | .... | 3 | 4.17 | .... | .... | .... | .... |
| Digestive system, others | 88 | 64.57 | 1 | .73 | .... | .... | 32 | 43.24 | .... | .... | 1 | 1.35 | 12 | 16.69 | .... | .... | .... | .... |
| Total diseases of the digestive system | 706 | 517.98 | 3 | 2.19 | 3 | 2.20 | 194 | 262.16 | .... | .... | 2 | 2.70 | 367 | 510.44 | .... | .... | 2 | 2.78 |
| Heart, diseases of | 4 | 2.93 | 3 | 2.20 | .... | .... | 4 | 5.41 | .... | .... | 2 | 2.70 | 1 | 1.39 | .... | .... | .... | .... |
| Arteries and veins | 4 | 2.93 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Total diseases of the circulatory system | 8 | 5.86 | 3 | 2.20 | .... | .... | 4 | 5.41 | .... | .... | 2 | 2.70 | 1 | 1.39 | .... | .... | .... | .... |
| Bronchitis | 201 | 147.47 | .... | .... | .... | .... | 58 | 78.37 | .... | .... | .... | .... | 6 | 8.34 | .... | .... | .... | .... |
| Pneumonia | 13 | 9.54 | .... | .... | 3 | 2.20 | 1 | 1.35 | .... | .... | .... | .... | 3 | 4.17 | .... | .... | .... | .... |
| Pleurisy | 4 | 2.93 | .... | .... | .... | .... | 1 | 1.35 | .... | .... | .... | .... | 3 | 4.17 | .... | .... | .... | .... |
| Respiratory system, others | 51 | 37.42 | .... | .... | .... | .... | 27 | 36.48 | .... | .... | .... | .... | 12 | 16.69 | .... | .... | .... | .... |
| Total diseases of the respiratory organs | 269 | 197.36 | .... | .... | 3 | 2.20 | 87 | 117.55 | .... | .... | .... | .... | 24 | 33.37 | .... | .... | .... | .... |
| Kidneys, diseases of | 2 | 1.47 | 1 | .73 | .... | .... | 2 | 2.70 | .... | .... | 1 | 1.35 | .... | .... | .... | .... | 1 | 1.39 |
| Varicocele | 4 | 2.93 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1.39 | .... | .... | .... | .... |
| Genito-urinary, others | 16 | 11.74 | .... | .... | .... | .... | 11 | 14.86 | .... | .... | .... | .... | 5 | 6.95 | .... | .... | .... | .... |
| Total diseases of the genito-urinary system | 22 | 16.14 | 1 | .73 | .... | .... | 13 | 17.56 | .... | .... | 1 | 1.35 | 6 | 8.34 | .... | .... | 1 | 1.39 |
| Adenitis | 6 | 4.40 | .... | .... | .... | .... | 1 | 1.35 | .... | .... | .... | .... | 3 | 4.17 | .... | .... | .... | .... |
| Lymphatic system, others | 4 | 2.93 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1.39 | .... | .... | .... | .... |
| Total diseases of the lymphatic system | 10 | 7.33 | .... | .... | .... | .... | 1 | 1.35 | .... | .... | .... | .... | 4 | 5.56 | .... | .... | .... | .... |
| Rheumatism, muscular | 114 | 83.64 | .... | .... | .... | .... | 59 | 79.73 | .... | .... | .... | .... | 11 | 15.30 | .... | .... | .... | .... |
| Osteitis and periostitis | 2 | 1.47 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1.39 | .... | .... | .... | .... |
| Arthritis and synovitis | 17 | 12.47 | .... | .... | .... | .... | 10 | 13.51 | 1 | 1.35 | .... | .... | 1 | 1.39 | .... | .... | .... | .... |
| Rheumatism, chronic articular | 17 | 12.47 | .... | .... | .... | .... | 5 | 6.76 | .... | .... | .... | .... | 2 | 2.78 | .... | .... | .... | .... |
| Muscles, bones, and joints, others | 8 | 5.87 | .... | .... | .... | .... | 2 | 2.70 | .... | .... | .... | .... | 3 | 4.17 | .... | .... | .... | .... |
| Total diseases of the muscles, bones, and joints | 158 | 115.92 | .... | .... | .... | .... | 76 | 102.70 | 1 | 1.35 | .... | .... | 18 | 25.03 | .... | .... | .... | .... |

TABLE VI.—*Armies, regular and volunteer, 1899—Admissions to sick report, discharges, and deaths, with their ratios per thousand of mean strength, arranged by arms of the service*—Continued.

| | Engineers. | | | | | | Ordnance. | | | | | | Signal Corps. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 1,363. | | | | | | 740. | | | | | | 719. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total diseases of the integumentary system, all | 126 | 92.45 | | | | | 23 | 31.08 | | | | | 31 | 43.12 | | | | |
| Total diseases of the eye | 35 | 25.68 | 1 | 0.73 | | | 18 | 24.32 | | | | | 8 | 11.13 | 1 | 1.39 | | |
| Total diseases of the ear | 9 | 6.60 | 4 | 2.93 | | | 3 | 4.05 | | | | | 5 | 6.95 | | | | |
| Total diseases of the nose | | | | | | | 2 | 2.70 | | | | | | | | | | |
| Total unclassified | 7 | 5.14 | | | | | | | | | | | 1 | 1.39 | | | | |
| Total for diseases | 2,572 | 1,887.02 | 19 | 13.94 | 11 | 8.07 | 661 | 893.24 | 2 | 2.70 | 8 | 10.81 | 844 | 1,173.85 | 4 | 5.56 | 6 | 8.34 |
| Drowning | | | | | 1 | .73 | | | | | | | | | | | | |
| Exhaustion from exposure and fatigue | 10 | 7.34 | | | | | | | | | | | 4 | 5.56 | | | | |
| Heat stroke | 3 | 2.20 | | | | | 1 | 1.35 | | | | | 1 | 1.39 | | | | |
| Venomous bites, stings, and wounds | 15 | 11.01 | | | | | 3 | 4.05 | | | | | | | | | | |
| Abrasions, blisters, burns, and scalds | 17 | 12.47 | | | | | 5 | 6.76 | | | | | 4 | 5.56 | | | | |
| Compression and concussion of brain | | | | | | | 1 | 1.35 | | | | | 2 | 2.78 | | | 1 | 1.39 |
| Contusions and sprains | 96 | 70.44 | | | | | 53 | 71.62 | | | | | 11 | 15.30 | | | | |
| Dislocations | 1 | .73 | | | | | | | | | | | | | | | | |
| Fractures (not shot) | 10 | 7.34 | | | | | 4 | 5.41 | | | 1 | 1.35 | 1 | 1.39 | | | 1 | 1.39 |
| Herniæ | 9 | 6.60 | | | | | 4 | 5.41 | | | | | 1 | 1.39 | 1 | 1.39 | | |
| Wounds, contused, lacerated, and punctured | 40 | 29.35 | | | | | 17 | 22.97 | 1 | 1.35 | | | 5 | 6.95 | | | | |
| Wounds, incised | 15 | 11.01 | | | | | 7 | 9.46 | | | | | 4 | 5.56 | | | | |
| Wounds, gunshot | 5 | 3.67 | | | | | 1 | 1.35 | | | | | 4 | 5.56 | | | 1 | 1.39 |
| Secondary results of injury | | | | | | | | | | | | | 1 | 1.39 | | | | |
| Other injuries | 12 | 8.80 | | | | | 3 | 4.05 | | | | | 2 | 2.78 | | | | |
| Total for injuries | 233 | 170.95 | | | 1 | .73 | 99 | 133.78 | 1 | 1.35 | 1 | 1.35 | 40 | 55.63 | 1 | 1.39 | 3 | 4.17 |
| Total for diseases and injuries | 2,805 | 2,057.97 | 19 | 13.94 | 12 | 8.80 | 760 | 1,027.03 | 3 | 4.05 | 9 | 12.16 | 884 | 1,229.48 | 5 | 6.95 | 9 | 12.52 |

TABLE VI.—*Armies, regular and volunteer, 1899—Admissions to sick report, discharges, and deaths, with their ratios per thousand of mean strength, arranged by arms of the service*—Continued.

| | Medical. | | | | | | Others. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 4,300. | | | | | | 3,566. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 5 | 1.16 | | | | | 2 | 0.56 | | | | |
| Measles | 94 | 21.86 | | | | | 242 | 67.87 | 2 | 0.56 | 16 | 4.49 |
| Smallpox | 6 | 1.40 | | | 1 | 0.23 | 2 | .56 | | | | |
| Vaccinia | 58 | 13.49 | | | | | 328 | 91.98 | | | | |
| Influenza | 192 | 44.65 | | | | | 74 | 20.75 | | | 1 | .28 |
| Dengue | 66 | 15.35 | | | | | | | | | | |
| Mumps | 33 | 7.67 | | | | | 80 | 22.44 | | | | |
| Diphtheria | 6 | 1.40 | | | | | 4 | 1.12 | | | | |
| Typhoid fever | 100 | 23.26 | | | 13 | 3.02 | 27 | 7.57 | | | 4 | 1.12 |
| Yellow fever | 20 | 4.65 | | | 4 | .93 | 5 | 1.40 | | | 1 | .28 |
| Cerebro-spinal fever | | | | | | | 6 | 1.68 | 1 | .28 | 4 | 1.12 |
| Malarial fever, intermittent | 683 | 158.84 | | | | | 349 | 97.87 | | | | |
| Malarial fever, remittent | 488 | 113.49 | | | 1 | .23 | 40 | 11.22 | | | | |
| Malarial fever, pernicious | 2 | .47 | | | | | | | | | | |
| Malarial cachexia | 46 | 10.70 | 5 | 1.16 | 1 | .23 | 18 | 5.05 | 5 | 1.40 | | |
| Fever, undetermined | 81 | 18.84 | | | | | 33 | 9.25 | | | | |
| Erysipelas | 5 | 1.16 | | | | | 3 | .84 | | | | |
| Septicæmia and tetanus | 2 | .47 | | | 1 | .23 | | | | | | |
| Rheumatic fever | 39 | 9.07 | | | | | 25 | 7.01 | 1 | .28 | 1 | .28 |
| Consumption | 26 | 6.05 | 16 | 3.72 | | | 13 | 3.65 | 5 | 1.40 | | |
| Cancer | 1 | .23 | | | | | 1 | .28 | | | | |
| Syphilis and results | 36 | 8.37 | 14 | 3.26 | | | 24 | 6.73 | 6 | 1.68 | | |
| Gonorrhea and results | 251 | 58.37 | 3 | .70 | | | 195 | 54.68 | 3 | .84 | | |
| Chancroid and results | 80 | 18.61 | 1 | .23 | | | 50 | 14.02 | 1 | .28 | | |
| Infections, others | 6 | 1.40 | | | | | 12 | 3.37 | | | | |
| Total infectious diseases | 2,326 | 540.96 | 39 | 9.07 | 21 | 4.87 | 1,533 | 429.90 | 24 | 6.72 | 27 | 7.57 |
| Anæmia | 8 | 1.86 | 2 | .47 | | | 5 | 1.40 | | | | |
| Nutrition, others | 4 | .93 | | | | | 4 | 1.12 | 1 | .28 | | |
| Total diseases of nutrition | 12 | 2.79 | 2 | .47 | | | 9 | 2.52 | 1 | .28 | | |
| Alcoholism | 58 | 13.49 | 2 | .47 | 1 | .23 | 40 | 11.22 | | | 1 | .28 |
| Brain and spinal cord | 20 | 4.65 | 4 | .93 | 1 | .23 | 24 | 6.73 | 4 | 1.12 | 2 | .56 |
| Insanity | 14 | 3.26 | 8 | 1.86 | | | 10 | 2.80 | 5 | 1.40 | | |
| Meningitis | 1 | .23 | | | | | 2 | .56 | | | | |

TABLE VI.—*Armies, regular and volunteer, 1899—Admissions to sick report, discharges, and deaths, with their ratios per thousand of mean strength, arranged by arms of the service*—Continued.

| | Medical. | | | | | | Others. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 4,300. | | | | | | 3,566. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Poisoning, narcotic | 8 | 1.86 | 4 | 0.93 | 1 | 0.23 | | | | | | |
| Nervous system, others | 123 | 28.61 | 7 | 1.63 | | | 33 | 9.25 | 3 | 0.84 | | |
| Total diseases of the nervous system | 224 | 52.10 | 25 | 5.82 | 3 | .69 | 109 | 30.56 | 12 | 3.36 | 3 | 0.84 |
| Poisoning, irritant | 5 | 1.16 | | | | | 1 | .28 | | | | |
| Tonsillitis, pharyngitis, and sore throat | 157 | 36.51 | | | | | 155 | 43.47 | | | | |
| Peritonitis | 1 | .23 | | | | | 1 | .28 | | | | |
| Dyspepsia, colic, and constipation | 187 | 43.49 | | | | | 140 | 39.26 | | | | |
| Gastritis | 137 | 31.86 | 1 | .23 | | | 30 | 8.41 | 1 | .28 | | |
| Diarrheal diseases | 629 | 146.28 | 3 | .70 | 6 | 1.40 | 129 | 36.18 | | | | |
| Enteritis | 29 | 6.74 | | | | | 9 | 2.52 | | | | |
| Perityphlitis and appendicitis | 19 | 4.42 | | | | | 8 | 2.24 | 2 | .56 | 1 | .28 |
| Digestive system, others | 82 | 19.07 | 3 | .70 | 3 | .70 | 92 | 25.80 | 2 | .56 | | |
| Total diseases of the digestive system | 1,246 | 289.76 | 7 | 1.63 | 9 | 2.10 | 565 | 158.44 | 5 | 1.40 | 1 | .28 |
| Heart, diseases of | 18 | 4.19 | 9 | 2.09 | 2 | .47 | 13 | 3.65 | 5 | 1.40 | | |
| Arteries and veins | 6 | 1.40 | 2 | .47 | | | 6 | 1.68 | 2 | .56 | | |
| Total diseases of the circulatory system | 24 | 5.59 | 11 | 2.56 | 2 | .47 | 19 | 5.33 | 7 | 1.96 | | |
| Bronchitis | 158 | 36.75 | | | | | 166 | 46.55 | | | | |
| Pneumonia | 19 | 4.42 | | | 2 | .47 | 32 | 8.97 | | | 6 | 1.68 |
| Pleurisy | 11 | 2.56 | | | | | 14 | 3.93 | 1 | .28 | | |
| Respiratory system, others | 64 | 14.88 | 1 | .23 | | | 36 | 10.09 | 2 | .56 | 1 | .28 |
| Total diseases of the respiratory organs | 252 | 58.61 | 1 | .23 | 2 | .47 | 248 | 69.54 | 3 | .84 | 7 | 1.96 |
| Kidneys, diseases of | 12 | 2.79 | 4 | .93 | | | 7 | 1.96 | | | 1 | .28 |
| Varicocele | 11 | 2.56 | | | | | 8 | 2.24 | | | | |
| Genito-urinary, others | 35 | 8.14 | | | | | 15 | 4.21 | 1 | .28 | | |
| Total diseases of the genito-urinary system | 58 | 13.49 | 4 | .93 | | | 30 | 8.41 | 1 | .28 | 1 | .28 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adenitis | 16 | 3.72 | | | | | 9 | 2.52 | | | | |
| Lymphatic system, others | 3 | .70 | | | | | 2 | .56 | | | | |
| Total diseases of the lymphatic system | 19 | 4.42 | | | | | 11 | 3.08 | | | | |
| Rheumatism, muscular | 91 | 21.16 | | | | | 109 | 30.57 | 5 | 1.40 | | |
| Osteitis and periostitis | 7 | 1.63 | | | | | 4 | 1.12 | 1 | .28 | | |
| Arthritis and synovitis | 18 | 4.19 | 1 | .23 | | | 9 | 2.52 | | | | |
| Rheumatism, chronic articular | 39 | 9.07 | 6 | 1.40 | | | 12 | 3.37 | 2 | .56 | | |
| Muscles, bones, and joints, others | 11 | 2.56 | | | | | 5 | 1.40 | | | | |
| Total diseases of the muscles, bones, and joints | 166 | 38.61 | 7 | 1.63 | | | 139 | 38.98 | 8 | 2.24 | | |
| Total diseases of the integumentary system, all | 196 | 45.58 | | | | | 123 | 34.49 | | | | |
| Total diseases of the eye | 38 | 8.84 | 5 | 1.16 | | | 42 | 11.78 | 4 | 1.12 | | |
| Total diseases of the ear | 28 | 6.51 | 1 | .23 | 2 | .47 | 22 | 6.17 | 3 | .84 | | |
| Total diseases of the nose | 4 | .93 | | | | | 1 | .28 | | | | |
| Total unclassified | 11 | 2.56 | | | | | 18 | 5.05 | | | | |
| Total for diseases | 4,604 | 1,070.70 | 102 | 23.72 | 39 | 9.07 | 2,869 | 804.54 | 68 | 19.07 | 39 | 10.94 |
| Drowning | | | | | 1 | .23 | | | | | | |
| Exhaustion from exposure and fatigue | 27 | 6.28 | | | | | 5 | 1.40 | | | | |
| Heat stroke | 3 | .70 | | | | | | | | | | |
| Lightning | 1 | .23 | | | | | | | | | | |
| Venomous bites, stings, and wounds | 7 | 1.63 | | | | | 1 | .28 | | | | |
| Abrasions, blisters, burns, and scalds | 24 | 5.58 | | | | | 28 | 7.85 | | | | |
| Compression and concussion of brain | 4 | .93 | | | 1 | .23 | 1 | .28 | | | | |
| Contusions and sprains | 108 | 25.12 | | | | | 120 | 33.65 | | | | |
| Dislocations | 7 | 1.63 | | | | | 7 | 1.96 | 1 | .28 | | |
| Fractures (not shot) | 12 | 2.79 | | | 1 | .23 | 12 | 3.37 | 2 | .56 | | |
| Herniæ | 28 | 6.51 | 5 | 1.16 | | | 20 | 5.61 | 3 | .84 | | |
| Wounds, contused, lacerated, and punctured | 18 | 4.19 | | | | | 45 | 12.62 | | | | |
| Wounds, incised | 19 | 4.42 | | | 1 | .23 | 23 | 6.45 | | | | |
| Wounds, gunshot | 25 | 5.81 | 1 | .23 | 10 | 2.33 | 10 | 2.80 | 2 | .56 | 2 | .56 |
| Secondary results of injury | 7 | 1.63 | 2 | .47 | | | 11 | 3.08 | 2 | .56 | | |
| Other injuries | 17 | 3.95 | | | 1 | .23 | 17 | 4.77 | 2 | .56 | 1 | .28 |
| Total for injuries | 307 | 71.40 | 8 | 1.86 | 15 | 3.49 | 300 | 84.13 | 12 | 3.37 | 3 | .84 |
| Total for diseases and injuries | 4,911 | 1,142.10 | 110 | 25.58 | 54 | 12.56 | 3,169 | 888.67 | 80 | 22.44 | 42 | 11.78 |

TABLE VII.—*Armies, regular and volunteer, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by the countries in which service was rendered.*

| | Cuba. | | | | | | Porto Rico. | | | | | | Pacific Islands. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 20,051. | | | | | | 3,727. | | | | | | 39,280. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 8 | 0.40 | | | | | | | | | | | | | | | | |
| Measles | 546 | 27.23 | | | 5 | 0.25 | 61 | 16.37 | | | 1 | 0.27 | 767 | 19.53 | | | 1 | 0.03 |
| Smallpox | 5 | .25 | | | 3 | .15 | 7 | 1.88 | | | | | 267 | 6.80 | | | 78 | 1.99 |
| Vaccinia | 869 | 43.34 | | | 1 | .05 | 191 | 51.25 | | | | | 1,354 | 34.47 | 1 | 0.03 | | |
| Influenza | 173 | 8.63 | | | | | 22 | 5.90 | | | | | 271 | 6.90 | | | | |
| Dengue | 84 | 4.19 | | | | | 73 | 19.59 | | | | | 1,421 | 36.18 | | | | |
| Mumps | 227 | 11.32 | | | | | 18 | 4.83 | | | | | 901 | 22.94 | | | | |
| Diphtheria | 2 | .10 | | | | | 1 | .27 | | | | | 32 | .81 | | | 4 | .10 |
| Typhoid fever | 790 | 39.40 | 2 | 0.10 | 85 | 4.24 | 56 | 15.03 | | | 10 | 2.68 | 862 | 21.95 | 9 | .23 | 118 | 3.00 |
| Yellow fever | 247 | 12.32 | | | 51 | 2.54 | | | | | | | | | | | | |
| Cerebro-spinal fever | 7 | .35 | | | 10 | .50 | 1 | .27 | | | | | 17 | .43 | 1 | .03 | 6 | .15 |
| Malarial fever, intermittent | 14,636 | 729.94 | 2 | .10 | | | 1,289 | 345.85 | | | | | 15,273 | 388.82 | 2 | .05 | | |
| Malarial fever, remittent | 6,667 | 332.51 | 4 | .20 | 5 | .25 | 375 | 100.62 | | | | | 8,502 | 216.45 | 2 | .05 | 8 | .20 |
| Malarial fever, pernicious | 79 | 3.94 | | | 35 | 1.75 | 4 | 1.07 | | | | | 45 | 1.15 | | | 18 | .46 |
| Malarial cachexia | 643 | 32.07 | 10 | .50 | 10 | .50 | 41 | 11.00 | | | | | 705 | 17.95 | 14 | .36 | 9 | .23 |
| Fever, undetermined | 837 | 41.75 | | | | | 45 | 12.07 | | | | | 1,455 | 37.04 | | | | |
| Erysipelas | 10 | .50 | | | | | 1 | .27 | | | | | 30 | .76 | | | 4 | .10 |
| Septicæmia and tetanus | 6 | .30 | | | 4 | .20 | 4 | 1.07 | | | 3 | .80 | 7 | .18 | 1 | .03 | 1 | .03 |
| Rheumatic fever | 126 | 6.28 | 2 | .10 | | | 50 | 13.42 | | | | | 327 | 8.32 | 1 | .03 | 2 | .05 |
| Consumption | 90 | 4.49 | 40 | 1.99 | 8 | .40 | 19 | 5.10 | 4 | 1.07 | 3 | .80 | 176 | 4.48 | 60 | 1.53 | 31 | .79 |
| Cancer | 6 | .30 | 2 | .10 | | | 1 | .27 | | | | | 11 | .28 | 1 | .03 | 2 | .05 |
| Syphilis and results | 332 | 16.56 | 41 | 2.04 | | | 114 | 30.59 | 16 | 4.29 | | | 461 | 11.74 | 43 | 1.09 | | |
| Gonorrhea and results | 1,763 | 87.92 | 9 | .45 | 1 | .05 | 636 | 170.64 | 5 | 1.34 | | | 2,372 | 60.39 | 6 | .15 | | |
| Chancroid and results | 890 | 44.39 | 4 | .20 | | | 317 | 85.06 | | | | | 1,754 | 44.65 | 1 | .03 | | |
| Infections, others | 46 | 2.29 | | | 1 | .05 | 8 | 2.15 | | | | | 48 | 1.22 | 1 | .03 | 2 | .05 |
| Total infectious diseases | 29,089 | 1,450.77 | 116 | 5.78 | 219 | 10.92 | 3,334 | 894.57 | 25 | 6.70 | 17 | 4.55 | 37,068 | 943.44 | 143 | 3.64 | 284 | 7.23 |
| Anæmia | 90 | 4.49 | 2 | .10 | | | 13 | 3.49 | | | | | 223 | 5.68 | 1 | .03 | 1 | .03 |
| Nutrition, others | 16 | .80 | 6 | .30 | 3 | .15 | 12 | 3.22 | | | | | 46 | 1.17 | 3 | .08 | 1 | .03 |
| Total diseases of nutrition | 106 | 5.29 | 8 | .40 | 3 | .15 | 25 | 6.71 | | | | | 269 | 6.85 | 4 | .11 | 2 | .05 |
| Alcoholism | 528 | 26.33 | 3 | .15 | 9 | .45 | 184 | 49.37 | | | | | 247 | 6.29 | 3 | .08 | 8 | .20 |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brain and spinal cord | 164 | 8.18 | 12 | .60 | 5 | .25 | 37 | 9.93 | 6 | 1.61 | 1 | .27 | 232 | 5.91 | 26 | .66 | 9 | .23 |
| Insanity | 32 | 1.60 | 24 | 1.20 | | | 14 | 3.76 | 2 | .54 | | | 84 | 2.14 | 16 | .41 | | |
| Meningitis | 6 | .30 | | | 1 | .05 | 1 | .27 | 1 | .27 | | | 11 | .28 | 4 | .10 | 6 | .15 |
| Poisoning, narcotic | 11 | .55 | 1 | .05 | 5 | .25 | 2 | .54 | 1 | .27 | | | 15 | .38 | 3 | .08 | 4 | .10 |
| Nervous system, others | 564 | 28.13 | 14 | .70 | | | 123 | 33.00 | | | | | 1,073 | 27.32 | 21 | .53 | 3 | .08 |
| Total diseases of the nervous system | 1,305 | 65.09 | 54 | 2.70 | 20 | 1.00 | 361 | 96.87 | 10 | 2.69 | 1 | .27 | 1,662 | 42.32 | 73 | 1.86 | 30 | .76 |
| Poisoning, irritant | 66 | 3.29 | | | 2 | .10 | 10 | 2.68 | | | | | 48 | 1.22 | | | 2 | .05 |
| Tonsillitis, pharyngitis, and sore throat | 509 | 25.39 | | | | | 113 | 30.32 | | | | | 915 | 23.29 | | | 2 | .05 |
| Peritonitis | 10 | .50 | | | 4 | .20 | 3 | .80 | | | 1 | .27 | 18 | .46 | | | 5 | .13 |
| Dyspepsia, colic, and constipation | 1,995 | 99.49 | 2 | .10 | | | 271 | 72.71 | | | | | 2,455 | 62.50 | 2 | .05 | | |
| Gastritis | 583 | 29.08 | | | 1 | .05 | 174 | 46.69 | | | | | 1,672 | 42.57 | 4 | .10 | 5 | .13 |
| Diarrheal diseases | 8,709 | 434.35 | 10 | .50 | 29 | 1.45 | 2,023 | 542.80 | 6 | 1.61 | 10 | 2.68 | 25,249 | 642.80 | 62 | 1.58 | 180 | 4.58 |
| Enteritis | 210 | 10.47 | | | 4 | .20 | 43 | 11.54 | 1 | .27 | 2 | .54 | 677 | 17.23 | 4 | .10 | 12 | .31 |
| Perityphlitis and appendicitis | 52 | 2.59 | | | 8 | .40 | 10 | 2.68 | | | | | 93 | 2.37 | 2 | .05 | 7 | .18 |
| Digestive system, others | 777 | 38.75 | 13 | .65 | 6 | .30 | 188 | 50.44 | | | | | 1,334 | 33.96 | 8 | .20 | 13 | .33 |
| Total diseases of the digestive system | 12,911 | 643.91 | 25 | 1.25 | 54 | 2.70 | 2,835 | 760.66 | 7 | 1.88 | 13 | 3.49 | 32,461 | 826.40 | 82 | 2.09 | 226 | 5.76 |
| Heart, diseases of | 133 | 6.63 | 40 | 1.99 | 4 | .20 | 27 | 7.24 | 6 | 1.61 | 1 | .27 | 223 | 5.68 | 43 | 1.09 | 13 | .33 |
| Arteries and veins | 53 | 2.64 | 5 | .25 | 1 | .05 | 8 | 2.15 | 1 | .27 | | | 106 | 2.70 | 9 | .23 | 3 | .08 |
| Total diseases of the circulatory system | 186 | 9.27 | 45 | 2.24 | 5 | .25 | 35 | 9.39 | 7 | 1.88 | 1 | .27 | 329 | 8.38 | 52 | 1.32 | 16 | .41 |
| Bronchitis | 1,036 | 51.67 | 1 | .05 | | | 168 | 45.08 | | | | | 1,786 | 45.47 | 5 | .13 | | |
| Pneumonia | 79 | 3.94 | | | 20 | 1.00 | 10 | 2.68 | | | 1 | .27 | 137 | 3.49 | 2 | .05 | 19 | .48 |
| Pleurisy | 61 | 3.04 | | | 1 | .05 | 14 | 3.76 | | | | | 155 | 3.95 | 3 | .08 | 1 | .03 |
| Respiratory system, others | 645 | 32.17 | 5 | .25 | 2 | .10 | 121 | 32.47 | | | | | 464 | 11.81 | 7 | .18 | 5 | .13 |
| Total diseases of the respiratory organs | 1,821 | 90.82 | 6 | .30 | 23 | 1.15 | 313 | 83.99 | | | 1 | .27 | 2,542 | 64.72 | 17 | .43 | 25 | .64 |
| Kidneys, diseases of | 51 | 2.54 | 3 | .15 | 4 | .20 | 13 | 3 49 | | | | | 104 | 2.65 | 3 | .08 | 17 | .43 |
| Varicocele | 111 | 5.54 | 3 | .15 | | | 29 | 7.78 | 1 | .27 | | | 183 | 4.66 | 5 | .13 | | |
| Genito-urinary, others | 341 | 17.01 | 7 | .35 | | | 76 | 20.39 | 1 | .27 | | | 474 | 12.07 | 3 | .08 | | |
| Total diseases of the genito-urinary system | 503 | 25.09 | 13 | .65 | 4 | .20 | 118 | 31.66 | 2 | .54 | | | 761 | 19.38 | 11 | .28 | 17 | .43 |
| Adenitis | 108 | 5.39 | | | | | 107 | 28.71 | | | | | 257 | 6.54 | 1 | .03 | | |
| Lymphatic system, others | 26 | 1.30 | 3 | .15 | | | 14 | 3.76 | | | | | 29 | .74 | 1 | .03 | | |
| Total diseases of the lymphatic system | 134 | 6.69 | 3 | .15 | | | 121 | 32.47 | | | | | 286 | 7.28 | 2 | .05 | | |
| Rheumatism, muscular | 1,084 | 54.06 | 4 | .20 | | | 245 | 65.74 | 3 | .80 | | | 1,840 | 46.84 | 14 | .36 | | |
| Osteitis and periostitis | 47 | 2.34 | 2 | .10 | | | 16 | 4.29 | 1 | .27 | | | 56 | 1.43 | | | | |
| Arthritis and synovitis | 195 | 9.73 | | | | | 41 | 11.00 | | | | | 287 | 7.31 | 8 | .20 | | |
| Rheumatism, chronic articular | 159 | 7.93 | 13 | .65 | | | 15 | 4.02 | 2 | .54 | | | 496 | 12.63 | 34 | .87 | | |
| Muscles, bones, and joints, others | 56 | 2.79 | 8 | .40 | | | 21 | 5.63 | 1 | .27 | | | 106 | 2.70 | 16 | .41 | | |
| Total diseases of the muscles, bones, and joints | 1,541 | 76.85 | 27 | 1.35 | | | 338 | 90.68 | 7 | 1.88 | | | 2,785 | 70.91 | 72 | 1.83 | | |

TABLE VII.—*Armies, regular and volunteer, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by the countries in which service was rendered*—Continued.

| | Cuba. | | | | | | Porto Rico. | | | | | | Pacific Islands. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 20,051. | | | | | | 3,727. | | | | | | 39,280. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Numbe | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total diseases of the integumentary system, all | 2,420 | 120.69 | 2 | 0.10 | | | 806 | 216.26 | | | | | 6,991 | 177.98 | 5 | 0.13 | 1 | 0.03 |
| Total diseases of the eye | 298 | 14.86 | 7 | .35 | | | 48 | 12.88 | 3 | 0.80 | | | 529 | 13.47 | 19 | .48 | | |
| Total diseases of the ear | 202 | 10.07 | 20 | 1.00 | | | 38 | 10.19 | 1 | .27 | | | 743 | 18.92 | 36 | .92 | | |
| Total diseases of the nose | 35 | 1.75 | | | | | 2 | .54 | | | | | 18 | .46 | 1 | .03 | | |
| Total unclassified | 338 | 16.86 | | | | | 34 | 9.12 | | | 1 | .27 | 232 | 5.91 | | | | |
| Total for diseases | 50,889 | 2,537.98 | 326 | 16.26 | 328 | 16.36 | 8,408 | 2,255.97 | 62 | 16.63 | 34 | 9.12 | 86,666 | 2,206.36 | 517 | 13.16 | 601 | 15.30 |
| Drowning | | | | | 9 | .45 | | | | | 1 | .27 | | | | | 78 | 1.99 |
| Exhaustion from exposure and fatigue | 46 | 2.29 | | | | | 5 | 1.34 | | | | | 1,331 | 33.89 | | | 3 | .08 |
| Heat stroke | 71 | 3.54 | | | | | | | | | | | 120 | 3.06 | 2 | .05 | | |
| Lightning | 3 | .15 | 1 | .05 | 2 | .10 | | | | | | | 4 | .10 | | | | |
| Venomous bites, stings, and wounds | 261 | 13.02 | | | | | 145 | 38.91 | | | | | 335 | 8.53 | | | | |
| Abrasions, blisters, burns, and scalds | 465 | 23.19 | | | | | 68 | 18.25 | | | | | 543 | 13.82 | | | | |
| Compression and concussion of brain | 7 | .35 | | | 3 | .15 | 6 | 1.61 | | | | | 9 | .23 | | | | |
| Contusions and sprains | 1,741 | 86.83 | 1 | .05 | | | 397 | 106.52 | | | | | 1,317 | 33.53 | 5 | .13 | | |
| Dislocations | 61 | 3.04 | | | | | 17 | 4.56 | | | | | 52 | 1.32 | 1 | .03 | | |
| Fractures (not shot) | 129 | 6.43 | 8 | .40 | 1 | .05 | 64 | 17.17 | 2 | .54 | 2 | .54 | 188 | 4.79 | 10 | .25 | | |
| Herniæ | 156 | 7.78 | 34 | 1.70 | | | 38 | 10.19 | 8 | 2.15 | | | 382 | 9.72 | 35 | .89 | 1 | .03 |
| Wounds, contused, lacerated, and punctured | 637 | 31.77 | | | | | 120 | 32.20 | | | | | 476 | 12.12 | 2 | .05 | 1 | .03 |
| Wounds, incised | 363 | 18.10 | 1 | .05 | 4 | .20 | 49 | 13.15 | | | 3 | .80 | 350 | 8.91 | 1 | .03 | 14 | .36 |
| Wounds, gunshot | 60 | 2.99 | 16 | .80 | 16 | .80 | 20 | 5.37 | | | 2 | .54 | 2,053 | 52.26 | 118 | 3.00 | 495 | 12.60 |
| Secondary results of injury | 89 | 4.44 | 18 | .90 | | | 19 | 5.10 | 1 | .27 | | | 109 | 2.77 | 6 | .15 | 1 | .03 |
| Other injuries | 157 | 7.83 | 1 | .05 | 4 | .20 | 45 | 12.07 | 1 | .27 | | | 161 | 4.10 | 3 | .08 | 7 | .18 |
| Total for injuries | 4,246 | 211.76 | 80 | 3.99 | 39 | 1.94 | 993 | 266.43 | 12 | 3.22 | 8 | 2.15 | 7,430 | 189.16 | 183 | 4.66 | 600 | 15.28 |
| Total for diseases and injuries | 55,135 | 2,749.74 | 406 | 20.25 | 367 | 18.30 | 9,401 | 2,522.40 | 74 | 19.85 | 42 | 11.27 | 94,096 | 2,395.52 | 700 | 17.82 | 1,201 | 30.58 |

TABLE VII.—*Armies, regular and volunteer, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by the countries in which service was rendered*—Continued.

| Causes of admission to sick report. | Total, islands. | | | | | | United States. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 63,058. | | | | | | 42,192. | | | | | |
| | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number | Ratio. |
| Scarlet fever | 8 | 0.13 | ........ | ........ | ........ | ........ | 14 | 0.33 | ........ | ........ | ........ | ........ |
| Measles | 1,374 | 21.79 | ........ | ........ | 7 | 0.11 | 1,376 | 32.61 | 3 | 0.07 | 30 | 0.71 |
| Smallpox | 279 | 4.42 | ........ | ........ | 81 | 1.28 | 67 | 1.59 | ........ | ........ | 3 | .07 |
| Vaccinia | 2,414 | 38.28 | 1 | 0.02 | 1 | .02 | 4,470 | 105.94 | ........ | ........ | ........ | ........ |
| Influenza | 466 | 7.39 | ........ | ........ | ........ | ........ | 5,164 | 122.39 | ........ | ........ | 5 | .12 |
| Dengue | 1,578 | 25.03 | ........ | ........ | ........ | ........ | 24 | .57 | ........ | ........ | ........ | ........ |
| Mumps | 1,146 | 18.17 | ........ | ........ | ........ | ........ | 693 | 16.42 | ........ | ........ | ........ | ........ |
| Diphtheria | 35 | .56 | ........ | ........ | 4 | .06 | 23 | .55 | ........ | ........ | 1 | .02 |
| Typhoid fever | 1,708 | 27.09 | 11 | .17 | 213 | 3.38 | 458 | 10.85 | 13 | .31 | 45 | 1.07 |
| Yellow fever | 247 | 3.92 | ........ | ........ | 51 | .81 | 14 | .33 | ........ | ........ | 3 | .07 |
| Cerebro-spinal fever | 25 | .40 | 1 | .02 | 16 | .25 | 38 | .90 | 2 | .05 | 25 | .60 |
| Malarial fever, intermittent | 31,198 | 494.76 | 4 | .06 | ........ | ........ | 10,035 | 237.84 | ........ | ........ | ........ | ........ |
| Malarial fever, remittent | 15,544 | 246.50 | 6 | .10 | 13 | .21 | 1,619 | 38.37 | 1 | .02 | 3 | .07 |
| Malarial fever, pernicious | 128 | 2.03 | ........ | ........ | 53 | .84 | 21 | .50 | ........ | ........ | 5 | .12 |
| Malarial cachexia | 1,389 | 22.03 | 24 | .38 | 19 | .30 | 598 | 14.17 | 81 | 1.92 | 1 | .02 |
| Fever, undetermined | 2,337 | 37.06 | ........ | ........ | ........ | ........ | 352 | 8.34 | ........ | ........ | ........ | ........ |
| Erysipelas | 41 | .65 | ........ | ........ | 4 | .06 | 51 | 1.21 | ........ | ........ | ........ | ........ |
| Septicæmia and tetanus | 17 | .27 | 1 | .02 | 8 | .13 | 8 | .19 | ........ | ........ | ........ | ........ |
| Rheumatic fever | 503 | 7.98 | 3 | .05 | 2 | .03 | 195 | 4.62 | 6 | .14 | 1 | .02 |
| Consumption | 285 | 4.52 | 104 | 1.65 | 42 | .67 | 134 | 3.18 | 85 | 2.01 | 15 | .36 |
| Cancer | 18 | .29 | 3 | .05 | 2 | .03 | 4 | .09 | 1 | .02 | 1 | .02 |
| Syphilis and results | 907 | 14.38 | 100 | 1.59 | ........ | ........ | 569 | 13.49 | 105 | 2.49 | ........ | ........ |
| Gonorrhea and results | 4,771 | 75.66 | 20 | .32 | 1 | .02 | 3,683 | 87.29 | 37 | .88 | ........ | ........ |
| Chancroid and results | 2,961 | 46.96 | 5 | .08 | ........ | ........ | 1,121 | 26.57 | 8 | .19 | ........ | ........ |
| Infections, others | 102 | 1.62 | 1 | .02 | 3 | .05 | 182 | 4.31 | 5 | .12 | 1 | .02 |
| Total infectious diseases | 69,481 | 1,101.89 | 284 | 4.53 | 520 | 8.25 | 30,913 | 732.67 | 347 | 8.22 | 139 | 3.29 |
| Anæmia | 326 | 5.17 | 3 | .05 | 1 | .02 | 162 | 3.84 | 12 | .28 | ........ | ........ |
| Nutrition, others | 74 | 1.17 | 9 | .14 | 4 | .06 | 52 | 1.23 | 12 | .28 | ........ | ........ |
| Total diseases of nutrition | 400 | 6.34 | 12 | .19 | 5 | .08 | 214 | 5.07 | 24 | .56 | ........ | ........ |
| Alcoholism | 959 | 15.21 | 6 | .10 | 17 | .27 | 568 | 13.46 | 1 | .02 | 12 | .28 |
| Brain and spinal cord | 433 | 6.87 | 44 | .70 | 15 | .24 | 232 | 5.50 | 56 | 1.33 | 5 | .12 |
| Insanity | 130 | 2.06 | 42 | .67 | ........ | ........ | 58 | 1.37 | 50 | 1.19 | ........ | ........ |
| Meningitis | 18 | .29 | 5 | .08 | 7 | .11 | 24 | .57 | 1 | .02 | 10 | .24 |

TABLE VII.—*Armies, regular and volunteer, 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, arranged by the countries in which service was rendered*—Continued.

| | Total, islands. | | | | | | United States. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean strength | 63,058. | | | | | | 42,192. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Poisoning, narcotic | 28 | 0.44 | 5 | 0.08 | 9 | 0.14 | 18 | 0.43 | 1 | 0.02 | 4 | 0.07 |
| Nervous system, others | 1,760 | 27.91 | 35 | .56 | 3 | .05 | 949 | 22.49 | 42 | 1.00 | ........ | ........ |
| Total diseases of the nervous system | 3,328 | 52.78 | 137 | 2.19 | 51 | .81 | 1,849 | 43.82 | 151 | 3.58 | 31 | .71 |
| Poisoning, irritant | 124 | 1.97 | ........ | ........ | 4 | .06 | 90 | 2.13 | ........ | ........ | 2 | .05 |
| Tonsillitis, pharyngitis, and sore throat | 1,537 | 24.37 | ........ | ........ | 2 | .03 | 3,580 | 84.85 | ........ | ........ | ........ | ........ |
| Peritonitis | 31 | .49 | ........ | ........ | 10 | .16 | 19 | .45 | ........ | ........ | 4 | .09 |
| Dyspepsia, colic, and constipation | 4,721 | 74.87 | 4 | .06 | ........ | ........ | 3,347 | 79.33 | 7 | .17 | ........ | ........ |
| Gastritis | 2,429 | 38.52 | 4 | .06 | 6 | .10 | 532 | 12.61 | 6 | .14 | ........ | ........ |
| Diarrheal diseases | 35,981 | 570.60 | 78 | 1.24 | 219 | 3.47 | 4,027 | 95.45 | 17 | .40 | 7 | .17 |
| Enteritis | 930 | 14.75 | 5 | .08 | 18 | .29 | 161 | 3.82 | 1 | .02 | 2 | .05 |
| Perityphlitis and appendicitis | 155 | 2.46 | 2 | .03 | 15 | .24 | 103 | 2.44 | 8 | .19 | 1 | .02 |
| Digestive system, others | 2,299 | 36.46 | 21 | .33 | 19 | .30 | 1,355 | 32.12 | 27 | .64 | 6 | .14 |
| Total diseases of the digestive system | 48,207 | 764.49 | 114 | 1.80 | 293 | 4.65 | 13,214 | 313.19 | 66 | 1.56 | 22 | .52 |
| Heart, diseases of | 383 | 6.07 | 89 | 1.41 | 18 | .29 | 177 | 4.20 | 56 | 1.33 | 13 | .31 |
| Arteries and veins | 167 | 2.65 | 15 | .24 | 4 | .06 | 82 | 1.94 | 19 | .45 | 1 | .02 |
| Total diseases of the circulatory system | 550 | 8.72 | 104 | 1.65 | 22 | .35 | 259 | 6.14 | 75 | 1.78 | 14 | .33 |
| Bronchitis | 2,990 | 47.42 | 6 | .10 | ........ | ........ | 5,381 | 127.54 | 6 | .14 | ........ | ........ |
| Pneumonia | 226 | 3.58 | 2 | .03 | 40 | .63 | 401 | 9.50 | 7 | .17 | 59 | 1.40 |
| Pleurisy | 230 | 3.65 | 3 | .05 | 2 | .03 | 182 | 4.31 | 6 | .14 | ........ | ........ |
| Respiratory system, others | 1,230 | 19.51 | 12 | .19 | 7 | .11 | 2,573 | 60.98 | 13 | .31 | 3 | .07 |
| Total diseases of the respiratory organs | 4,676 | 74.16 | 23 | .37 | 49 | .77 | 8,537 | 202.34 | 32 | .76 | 62 | 1.47 |
| Kidneys, diseases of | 168 | 2.66 | 6 | .10 | 21 | .33 | 75 | 1.78 | 13 | .31 | 7 | .17 |
| Varicocele | 323 | 5.12 | 9 | .14 | ........ | ........ | 99 | 2.35 | 8 | .19 | ........ | ........ |
| Genito-urinary, others | 891 | 14.13 | 11 | .17 | ........ | ........ | 525 | 12.44 | 16 | .38 | ........ | ........ |
| Total diseases of the genito-urinary system | 1,382 | 21.91 | 26 | .41 | 21 | .33 | 699 | 16.57 | 37 | .88 | 7 | .17 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Adenitis** | 472 | 7.49 | 1 | .02 | | | 213 | 5.06 | 1 | .02 | | |
| **Lymphatic system, others** | 69 | 1.09 | 4 | .06 | | | 28 | .66 | | | | |
| **Total diseases of the lymphatic system** | 541 | 8.58 | 5 | .08 | | | 241 | 5.71 | 1 | .02 | | |
| Rheumatism, muscular | 3,169 | 50.26 | 21 | .33 | | | 2,444 | 57.93 | 35 | .83 | | |
| Osteitis and periostitis | 119 | 1.89 | 3 | .05 | | | 81 | 1.92 | 5 | .12 | | |
| Arthritis and synovitis | 523 | 8.29 | 8 | .13 | | | 360 | 8.53 | 11 | .26 | | |
| Rheumatism, chronic articular | 670 | 10.63 | 49 | .78 | | | 278 | 6.59 | 46 | 1.09 | | |
| Muscles, bones, and joints, others | 183 | 2.90 | 25 | .40 | | | 155 | 3.67 | 21 | .50 | | |
| **Total diseases of the muscles, bones, and joints** | 4,664 | 73.97 | 106 | 1.69 | | | 3,318 | 78.65 | 118 | 2.80 | | |
| **Total diseases of the integumentary system, all** | 10,217 | 162.03 | 7 | .11 | 1 | .02 | 2,753 | 65.25 | 12 | .28 | | |
| **Total diseases of the eye** | 875 | 13.88 | 29 | .46 | | | 551 | 13.06 | 39 | .92 | | |
| **Total diseases of the ear** | 983 | 15.59 | 57 | .90 | | | 343 | 8.13 | 35 | .83 | 2 | .05 |
| **Total diseases of the nose** | 55 | .87 | 1 | .02 | | | 88 | 2.09 | 2 | .05 | | |
| **Total unclassified** | 604 | 9.58 | | | 1 | .02 | 176 | 4.17 | 1 | .02 | | |
| **Total for diseases** | 145,963 | 2,314.74 | 905 | 14.35 | 963 | 15.27 | 63,155 | 1,496.84 | 940 | 22.28 | 277 | 6.56 |
| **Drowning** | | | | | 88 | 1.40 | | | | | | |
| **Exhaustion from exposure and fatigue** | 1,382 | 21.92 | | | 3 | .05 | 92 | 2.18 | | | | |
| **Heatstroke** | 191 | 3.03 | 2 | .03 | | | 12 | .28 | | | | |
| **Lightning** | 7 | .11 | 1 | .02 | 2 | .03 | | | | | | |
| Venomous bites, stings, and wounds | 741 | 11.75 | | | | | 93 | 2.20 | | | | |
| Abrasions, blisters, burns, and scalds | 1,076 | 17.06 | | | | | 628 | 14.88 | | | | |
| Compression and concussion of brain | 22 | .35 | | | 3 | .05 | 18 | .43 | 1 | .02 | 2 | .05 |
| Contusions and sprains | 3,455 | 54.79 | 6 | .10 | | | 3,693 | 87.58 | 5 | .12 | | |
| Dislocations | 130 | 2.06 | 1 | .02 | | | 113 | 2.68 | 3 | .07 | | |
| Fractures (not shot) | 381 | 6.04 | 20 | .32 | 3 | .05 | 290 | 6.87 | 18 | .43 | 10 | .24 |
| Herniæ | 576 | 9.13 | 77 | 1.22 | 1 | .02 | 229 | 5.43 | 48 | 1.14 | | |
| Wounds, contused, lacerated, and punctured | 1,233 | 19.55 | 2 | .03 | 1 | .02 | 1,158 | 27.45 | 1 | .02 | 1 | .02 |
| Wounds, incised | 762 | 12.08 | 2 | .03 | 21 | .33 | 550 | 13.04 | 4 | .09 | | |
| Wounds, gunshot | 2,133 | 33.83 | 134 | 2.13 | 513 | 8.14 | 142 | 3.37 | 92 | 2.18 | 25 | .59 |
| Secondary results of injury | 217 | 3.44 | 25 | .40 | 1 | .02 | 148 | 3.51 | 12 | .28 | | |
| Other injuries | 363 | 5.76 | 5 | .08 | 11 | .17 | 455 | 10.78 | 13 | .31 | 7 | .17 |
| **Total for injuries** | 12,669 | 200.91 | 275 | 4.36 | 647 | 10.26 | 7,623 | 180.67 | 197 | 4.67 | 56 | 1.33 |
| **Total for diseases and injuries** | 158,632 | 2,515.65 | 1,180 | 18.71 | 1,610 | 25.53 | 70,778 | 1,677.51 | 1,137 | 26.95 | 333 | 7.89 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888–1897.*

| | Decade 1888–1897. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | White troops. | | | | | | Colored troops. | | | | | |
| ean strength | 24,548. | | | | | | 2,342. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 49 | 0.20 | | | | | | | | | | |
| Measles | 1,453 | 5.92 | | | 1 | 0.004 | 64 | 2.73 | | | | |
| Smallpox | 21 | .09 | | | 3 | .01 | 4 | .17 | | | | |
| Vaccinia | 7,913 | 32.24 | 1 | 0.004 | | | 553 | 23.61 | | | | |
| Influenza | 14,228 | 57.96 | | | 43 | .18 | 1,766 | 75.41 | | | 4 | 0.17 |
| Dengue | 970 | 3.95 | | | | | | | | | | |
| Mumps | 1,154 | 4.70 | | | | | 193 | 8.24 | | | | |
| Diphtheria | 124 | .51 | | | 2 | .01 | 21 | .90 | | | | |
| Typhoid fever | 1,273 | 5.19 | 3 | .01 | 138 | .56 | 69 | 2.95 | | | 10 | .43 |
| Yellow fever | 7 | .03 | | | 3 | .01 | | | | | | |
| Cerebro-spinal fever | 12 | .05 | 1 | .004 | 5 | .02 | 1 | .04 | | | | |
| Malarial fever, intermittent | 16,353 | 66.62 | | | | | 598 | 25.53 | | | | |
| Malarial fever, remittent | 3,572 | 14.55 | | | 13 | .05 | 272 | 11.61 | | | 6 | .26 |
| Malarial fever, pernicious | 14 | .06 | | | 6 | .02 | 4 | .17 | | | 2 | .09 |
| Malarial cachexia | 644 | 2.66 | 16 | .07 | 1 | .004 | 82 | 3.50 | 1 | 0.04 | | |
| Fever, undetermined | 2,908 | 11.85 | | | | | 3.42 | 14.60 | | | | |
| Erysipelas | 446 | 1.82 | | | 14 | .06 | 21 | .90 | | | 3 | .13 |
| Septicæmia and tetanus | 10 | .04 | | | 10 | .04 | 1 | .04 | | | 1 | .04 |
| Rheumatic fever | 1,180 | 4.81 | 12 | .05 | 2 | .01 | 107 | 4.57 | | | | |
| Consumption | 601 | 2.45 | 340 | 1.39 | 100 | .41 | 83 | 3.54 | 42 | 1.79 | 24 | 1.02 |
| Cancer | 50 | .20 | 7 | .03 | 28 | .11 | 4 | .17 | 1 | .04 | 1 | .04 |
| Syphilis and results | 3,420 | 13.93 | 320 | 1.30 | 6 | .02 | 392 | 16.74 | 61 | 2.60 | 1 | .04 |
| Gonorrhea and results | 11,064 | 45.06 | 59 | .24 | | | 942 | 40.23 | 2 | .09 | | |
| Chancroid and results | 2,750 | 11.20 | 2 | .01 | | | 378 | 16.14 | | | | |
| Infections, others | 563 | 2.29 | 19 | .08 | 12 | .05 | 40 | 1.71 | 2 | .09 | 1 | .04 |
| Total infectious diseases | 70,769 | 288.29 | 780 | 3.18 | 387 | 1.58 | 5,987 | 253.50 | 109 | 4.65 | 53 | 2.26 |
| Anæmia | 198 | .81 | 13 | .05 | 1 | .004 | 11 | .47 | 2 | .09 | | |
| Nutrition, others | 300 | 1.22 | 102 | .42 | 10 | .04 | 26 | 1.11 | 10 | .43 | 1 | .04 |
| Total diseases of nutrition | 498 | 2.03 | 115 | .47 | 11 | .04 | 37 | 1.58 | 12 | .51 | 1 | .04 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Alcoholism | 8,568 | 34.91 | 11 | .04 | 58 | .24 | 114 | 4.87 | 1 | .04 | | |
| Brain and spinal cord | 1,237 | 5.04 | 188 | .77 | 63 | .26 | 84 | 3.59 | 14 | .60 | 7 | .30 |
| Insanity | 301 | 1.23 | 267 | 1.09 | 8 | .03 | 16 | .68 | 14 | .60 | 1 | .04 |
| Meningitis | 5 | .02 | | | 2 | .01 | | | | | | |
| Poisoning, narcotic | 141 | .57 | 14 | .06 | 12 | .05 | 5 | .21 | 1 | .04 | | |
| Nervous system, others | 8,401 | 34.23 | 155 | .63 | 4 | .02 | 1,099 | 46.92 | 6 | .26 | | |
| Total diseases of the nervous system | 18,658 | 75.99 | 635 | 2.59 | 147 | .60 | 1,318 | 56.28 | 36 | 1.54 | 8 | .34 |
| Poisoning, irritant | 238 | .97 | | | 51 | .21 | 8 | .34 | | | 1 | .04 |
| Tonsillitis, pharyngitis, and sore throat | 15,757 | 64.19 | 2 | .01 | 1 | .004 | 1,813 | 77.41 | | | | |
| Peritonitis | 59 | .24 | 5 | .02 | 20 | .08 | 2 | .09 | | | | |
| Dyspepsia, colic, and constipation | 12,487 | 50.87 | 32 | .13 | 1 | .004 | 1,540 | 65.75 | 5 | .21 | | |
| Gastritis | 796 | 3.24 | 22 | .09 | 12 | .05 | 59 | 2.52 | 2 | .09 | 2 | .09 |
| Diarrheal diseases | 22,827 | 92.99 | 35 | .14 | 15 | .06 | 1,770 | 75.58 | 3 | .13 | 2 | .09 |
| Enteritis | 431 | 1.76 | 5 | .02 | 16 | .07 | 29 | 1.24 | | | | |
| Perityphlitis and appendicitis | 122 | .50 | 3 | .01 | 10 | .04 | 13 | .56 | | | 2 | .09 |
| Digestive system, others | 7,046 | 28.71 | 54 | .22 | 51 | .21 | 859 | 36.68 | 6 | .26 | 3 | .13 |
| Total diseases of the digestive system | 59,763 | 243.46 | 158 | .64 | 177 | .72 | 6,093 | 260.17 | 16 | .69 | 10 | .44 |
| Heart, diseases of | 1,134 | 4.62 | 292 | 1.19 | 84 | .34 | 87 | 3.72 | 24 | 1.02 | 6 | .26 |
| Arteries and veins | 316 | 1.29 | 84 | .34 | 23 | .09 | 14 | .60 | 2 | .09 | 8 | .34 |
| Total diseases of the circulatory system | 1,450 | 5.91 | 376 | 1.53 | 107 | .44 | 101 | 4.31 | 26 | 1.11 | 14 | .60 |
| Bronchitis | 15,420 | 62.87 | 49 | .20 | 4 | .02 | 1,528 | 65.24 | 2 | .09 | | |
| Pneumonia | 832 | 3.39 | 12 | .05 | 140 | .57 | 153 | 6.53 | 2 | .09 | 29 | 1.24 |
| Pleurisy | 478 | 1.95 | 15 | .06 | 6 | .02 | 72 | 3.07 | 1 | .04 | 1 | .04 |
| Respiratory system, others | 6,773 | 27.59 | 45 | .18 | 14 | .06 | 738 | 31.51 | 2 | .09 | 4 | .17 |
| Total diseases of the respiratory organs | 23,503 | 95.74 | 121 | .49 | 164 | .67 | 2,491 | 106.36 | 7 | .31 | 34 | 1.45 |
| Kidneys, diseases of | 377 | 1.54 | 43 | .18 | 57 | .23 | 52 | 2.22 | 5 | .21 | 7 | .30 |
| Varicocele | 215 | .88 | 37 | .15 | | | 19 | .81 | 2 | .09 | | |
| Genito-urinary, others | 1,643 | 6.69 | 76 | .31 | 2 | .01 | 235 | 10.03 | 8 | .34 | | |
| Total diseases of the genito-urinary system | 2,235 | 9.11 | 156 | .64 | 59 | .24 | 306 | 13.06 | 15 | .64 | 7 | .30 |
| Adenitis | 876 | 3.57 | 8 | .03 | | | 110 | 4.70 | | | | |
| Lymphatic system, others | 144 | .59 | 5 | .02 | 2 | .01 | 14 | .60 | | | | |
| Total diseases of the lymphatic system | 1,020 | 4.16 | 13 | .05 | 2 | .01 | 124 | 5.29 | | | | |
| Rheumatism, muscular | 11,002 | 44.84 | 141 | .57 | | | 1,626 | 69.43 | 15 | .64 | | |
| Osteitis and periostitis | 171 | .70 | 19 | .08 | | | 22 | .94 | 5 | .21 | | |
| Arthritis and synovitis | 717 | 2.92 | 113 | .46 | | | 97 | 4.14 | 12 | .51 | | |
| Rheumatism, chronic articular | 3,384 | 13.79 | 172 | .70 | 2 | .01 | 589 | 25.15 | 20 | .85 | | |
| Muscles, bones, and joints, others | 724 | 2.95 | 80 | .33 | 1 | .004 | 77 | 3.29 | 8 | .34 | 1 | .04 |
| Total diseases of the muscles, bones, and joints | 15,998 | 65.18 | 525 | 2.14 | 3 | .01 | 2,411 | 102.95 | 60 | 2.52 | 1 | .04 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratio per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888–1897*—Continued.

| | Decade 1888–1897. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | White troops. | | | | | | Colored troops. | | | | | |
| Mean strength | 24,548 | | | | | | 2,342 | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total diseases of the integumentary system | 18,519 | 75.44 | 42 | 0.18 | 3 | 0.01 | 1,068 | 45.60 | 4 | 0.17 | 1 | 0.04 |
| Total diseases of the eye | 3,770 | 15.36 | 207 | .84 | | | 584 | 24.94 | 20 | .85 | | |
| Total diseases of the ear | 1,690 | 6.88 | 123 | .50 | 2 | .01 | 77 | 3.29 | 5 | .21 | | |
| Total diseases of the nose | 435 | 1.77 | 29 | .12 | 1 | .004 | 25 | 1.07 | 2 | .09 | | |
| Total unclassified | 896 | 3.65 | 14 | .06 | 3 | .01 | 141 | 6.02 | | | 2 | .09 |
| Total for diseases | 219,199 | 892.94 | 3,294 | 13.42 | 1,066 | 4.34 | 20,713 | 884.42 | 312 | 13.32 | 131 | 5.59 |
| Drowning | | | | | 134 | .55 | | | | | 8 | .34 |
| Exhaustion from exposure and fatigue | 286 | 1.17 | | | 4 | .02 | 16 | .68 | | | | |
| Heat stroke | 503 | 2.05 | 6 | .02 | 6 | .02 | 20 | .85 | 1 | .04 | | |
| Lightning | 2 | .01 | | | 1 | .004 | 1 | .04 | | | | |
| Venomous bites, stings, and wounds | 460 | 1.87 | 2 | .01 | | | 47 | 2.01 | | | | |
| Abrasions, blisters, burns, and scalds | 4,726 | 19.25 | 4 | .02 | | | 292 | 11.61 | | | | |
| Compression and concussion of brain | 147 | .60 | 7 | .03 | 15 | .06 | 15 | .64 | | | 2 | .09 |
| Contusions and sprains | 30,164 | 122.88 | 58 | .24 | 3 | .01 | 3,108 | 132.71 | 4 | .17 | 1 | .04 |
| Dislocations | 633 | 2.58 | 23 | .09 | 1 | .004 | 43 | 1.84 | 3 | .13 | | |
| Fractures (not shot) | 1,623 | 6.61 | 121 | .49 | 32 | .13 | 129 | 5.51 | 6 | .26 | 3 | .13 |
| Herniæ | 588 | 2.40 | 220 | .90 | 1 | .004 | 64 | 2.73 | 21 | .90 | | |
| Wounds, contused, lacerated, and punctured | 7,425 | 30.25 | 33 | .13 | 5 | .02 | 976 | 41.68 | 4 | .17 | | |
| Wounds, incised | 3,936 | 16.04 | 21 | .09 | 5 | .02 | 440 | 18.79 | 1 | .04 | 2 | .09 |
| Wounds, gunshot | 661 | 2.69 | 142 | .58 | 214 | .87 | 121 | 5.17 | 14 | .60 | 37 | 1.58 |
| Secondary results of injury | 543 | 2.21 | 68 | .28 | | | 74 | 3.16 | 9 | .38 | | |
| Other injuries | 6,139 | 25.01 | 56 | .23 | 101 | .41 | 888 | 37.92 | 9 | .38 | 3 | .13 |
| Total for injuries | 57,836 | 235.61 | 761 | 3.10 | 522 | 2.13 | 6,214 | 265.35 | 72 | 3.07 | 56 | 2.39 |
| Total for diseases and injuries | 277,035 | 1,128.55 | 4,055 | 16.52 | 1,588 | 6.47 | 26,927 | 1,149.76 | 384 | 16.40 | 187 | 7.98 |

**TABLE VIII.**—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888–1897*—Continued.

| | Decade 1888–1897. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Indian troops. | | | | | | Total army. | | | | | |
| Mean strength | 227. | | | | | | 27,117. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | | | | | | | 49 | 0.18 | | | | |
| Measles | 8 | 3.52 | | | | | 1,525 | 5.62 | | | 1 | 0.004 |
| Smallpox | | | | | | | 25 | .09 | | | 3 | .01 |
| Vaccinia | 226 | 99.56 | | | | | 8,692 | 32.06 | 1 | 0.004 | | |
| Influenza | 79 | 34.81 | | | | | 16,073 | 59.27 | | | 47 | .17 |
| Dengue | | | | | | | 970 | 3.58 | | | | |
| Mumps | 42 | 18.50 | | | | | 1,389 | 5.12 | | | | |
| Diphtheria | | | | | | | 145 | .53 | | | 2 | .01 |
| Typhoid fever | 1 | .44 | | | | | 1,343 | 4.95 | 3 | .01 | 148 | .55 |
| Yellow fever | | | | | | | 7 | .03 | | | 3 | .01 |
| Cerebro-spinal fever | | | | | | | 13 | .05 | 1 | .004 | 5 | .02 |
| Malarial fever, intermittent | 66 | 29.08 | | | | | 17,017 | 62.76 | | | | |
| Malarial fever, remittent | 4 | 1.76 | | | | | 3,848 | 14.19 | | | 19 | .07 |
| Malarial fever, pernicious | | | | | | | 18 | .07 | | | 8 | .03 |
| Malarial cachexia | | | | | | | 726 | 2.68 | 17 | .06 | 1 | .004 |
| Fever, undetermined | 13 | 5.73 | | | | | 3,263 | 12.03 | | | | |
| Erysipelas | 13 | 5.73 | | | | | 480 | 1.77 | | | 17 | .06 |
| Septicæmia and tetanus | | | | | | | 11 | .04 | | | 11 | .04 |
| Rheumatic fever | 9 | 3.96 | 1 | 0.44 | | | 1,296 | 4.78 | 13 | .05 | 2 | .01 |
| Consumption | 54 | 23.79 | 26 | 11.41 | 16 | 7.04 | 738 | 2.72 | 408 | 1.50 | 140 | .52 |
| Cancer | | | | | | | 54 | .20 | 8 | .03 | 29 | .11 |
| Syphilis and results | 33 | 14.54 | 6 | 2.64 | | | 3,845 | 14.18 | 387 | 1.43 | 7 | .03 |
| Gonorrhea and results | 149 | 65.64 | | | | | 12,145 | 44.79 | 61 | .22 | | |
| Chancroid and results | 26 | 11.45 | | | | | 3,154 | 11.63 | 2 | .01 | | |
| Infections, others | 21 | 9.25 | 2 | .88 | | | 624 | 2.30 | 23 | .08 | 13 | .05 |
| Total infectious diseases | 744 | 327.75 | 35 | 15.37 | 16 | 7.04 | 77,450 | 285.62 | 924 | 3.41 | 456 | 1.68 |
| Anæmia | | | | | | | 209 | .77 | 15 | .06 | 1 | .004 |
| Nutrition, others | 1 | .44 | | | | | 327 | 1.21 | 112 | .41 | 11 | .04 |
| Total diseases of nutrition | 1 | .44 | | | | | 536 | 1.98 | 127 | .47 | 12 | .04 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888-1897*—Continued.

| | Decade 1888-1897. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Indian troops. | | | | | | Total army. | | | | | |
| Mean strength | 227. | | | | | | 27,117. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Alcoholism | 10 | 4.41 | | | | | 8,692 | 32.06 | 12 | 0.04 | 58 | 0.21 |
| Brain and spinal cord | 3 | 1.32 | 1 | 0.44 | 1 | 0.44 | 1,324 | 4.88 | 203 | .75 | 71 | .26 |
| Insanity | | | | | | | 317 | 1.17 | 281 | 1.04 | 9 | .03 |
| Meningitis | | | | | | | 5 | .02 | | | 2 | .01 |
| Poisoning, narcotic | 1 | .44 | | | | | 147 | .54 | 15 | .06 | 12 | .04 |
| Nervous system, others | 71 | 31.28 | 2 | .88 | | | 9,571 | 35.30 | 163 | .60 | 4 | .01 |
| Total diseases of the nervous system | 85 | 37.45 | 3 | 1.32 | 1 | .44 | 20,056 | 73.96 | 674 | 2.49 | 156 | .58 |
| Poisoning, irritant | | | | | | | 246 | .91 | | | 52 | .19 |
| Tonsillitis, pharyngitis, and sore throat | 121 | 53.30 | | | | | 17,691 | 65.24 | 2 | .01 | 1 | .004 |
| Peritonitis | | | | | | | 61 | .22 | 5 | .02 | 20 | .07 |
| Dyspepsia, colic, and constipation | 132 | 58.15 | | | | | 14,159 | 52.21 | 37 | .14 | 1 | .004 |
| Gastritis | 3 | 1.32 | | | | | 858 | 3.16 | 24 | .09 | 14 | .05 |
| Diarrheal diseases | 97 | 42.74 | | | | | 24,694 | 91.06 | 38 | .14 | 17 | .06 |
| Enteritis | 1 | .44 | | | | | 461 | 1.70 | 5 | .02 | 16 | .06 |
| Perityphlitis and appendicitis | | | | | | | 135 | .50 | 3 | .01 | 12 | .04 |
| Digestive system, others | 33 | 14.54 | | | | | 7,938 | 29.28 | 60 | .22 | 54 | .20 |
| Total diseases of the digestive system | 387 | 170.50 | | | | | 66,243 | 244.29 | 174 | .64 | 187 | .69 |
| Heart, diseases of | 5 | 2.20 | 2 | .88 | 1 | .44 | 1,226 | 4.52 | 318 | 1.17 | 91 | .34 |
| Arteries and veins | | | | | | | 330 | 1.22 | 86 | .32 | 31 | .11 |
| Total diseases of the circulatory system | 5 | 2.20 | 2 | .88 | 1 | .44 | 1,556 | 5.74 | 404 | 1.49 | 122 | .45 |
| Bronchitis | 121 | 53.30 | | | | | 17,069 | 62.94 | 51 | .19 | 4 | .01 |
| Pneumonia | 22 | 9.69 | | | 2 | .88 | 1,007 | 3.71 | 14 | .05 | 171 | .63 |
| Pleurisy | 5 | 2.20 | 2 | .88 | | | 555 | 2.05 | 18 | .07 | 7 | .03 |
| Respiratory system, others | 48 | 21.15 | 1 | .44 | | | 7,559 | 27.88 | 48 | .18 | 18 | .07 |
| Total diseases of the respiratory organs | 196 | 86.34 | 3 | 1.32 | 2 | .88 | 26,190 | 96.59 | 181 | .49 | 200 | .74 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidneys, diseases of | | | | | | | 429 | 1.58 | 48 | .18 | 64 | .24 |
| Varicocele | | | | | | | 234 | .86 | 39 | .14 | | |
| Genito-urinary, others | 16 | 7.05 | 1 | .44 | | | 1,894 | 6.98 | 85 | .31 | 2 | .01 |
| Total diseases of the genito-urinary system | 16 | 7.05 | 1 | .44 | | | 2,557 | 9.43 | 172 | .63 | 66 | .25 |
| Adenitis | 21 | 9.25 | | | | | 1,007 | 3.71 | 8 | .03 | | |
| Lymphatic system, others | 3 | 1.32 | | | | | 161 | .59 | 5 | .02 | 2 | .01 |
| Total diseases of the lymphatic system | 24 | 10.57 | | | | | 1,168 | 4.31 | 13 | .05 | 2 | .01 |
| Rheumatism, muscular | 81 | 35.69 | | | | | 12,709 | 46.87 | 156 | .58 | | |
| Osteitis and periostitis | 1 | .44 | 1 | .44 | | | 194 | .72 | 25 | .09 | | |
| Arthritis and synovitis | 3 | 1.32 | | | | | 817 | 3.01 | 125 | .46 | | |
| Rheumatism, chronic articular | 18 | 7.93 | 2 | .88 | | | 3,991 | 14.72 | 194 | .72 | 2 | .01 |
| Muscles, bones, and joints, others | 5 | 2.20 | 1 | .44 | | | 806 | 2.97 | 89 | .33 | 2 | .01 |
| Total diseases of the muscles, bones, and joints | 108 | 47.57 | 4 | 1.76 | | | 18,517 | 68.29 | 589 | 2.17 | 4 | .02 |
| Total diseases of the integumentary system | 155 | 68.29 | | | | | 19,742 | 72.81 | 46 | .17 | 4 | .01 |
| Total diseases of the eye | 132 | 58.15 | 1 | .44 | | | 4,486 | 16.54 | 228 | .84 | | |
| Total diseases of the ear | 18 | 7.93 | | | 1 | .44 | 1,785 | 6.58 | 128 | .47 | 3 | .01 |
| Total diseases of the nose | 4 | 1.76 | | | | | 464 | 1.71 | 31 | .11 | 1 | .004 |
| Total unclassified | 14 | 6.17 | | | 1 | .44 | 1,051 | 3.88 | 14 | .05 | 6 | .02 |
| Total for diseases | 1,889 | 832.16 | 49 | 21.57 | 22 | 9.68 | 241,801 | 891.70 | 3,655 | 13.47 | 1,219 | 4.50 |
| Drowning | | | | | 1 | .44 | | | | | 143 | .53 |
| Exhaustion from exposure and fatigue | | | | | | | 302 | 1.11 | | | 4 | .01 |
| Heat stroke | | | | | | | 523 | 1.93 | 7 | .03 | 6 | .02 |
| Lightning | | | | | | | 3 | .01 | | | 1 | .004 |
| Venomous bites, stings, and wounds | 3 | 1.32 | | | | | 510 | 1.88 | 2 | .01 | | |
| Abrasions, blisters, burns, and scalds | 60 | 26.43 | | | | | 5,058 | 18.65 | 4 | .01 | | |
| Compression and concussion of brain | | | | | | | 162 | .60 | 7 | .03 | 17 | .06 |
| Contusions and sprains | 274 | 120.71 | | | | | 33,546 | 123.71 | 62 | .23 | 4 | .01 |
| Dislocations | 13 | 5.73 | | | | | 689 | 2.54 | 26 | .10 | 1 | .004 |
| Fractures (not shot) | 25 | 11.01 | | | 4 | 1.76 | 1,777 | 6.55 | 127 | .47 | 39 | .14 |
| Herniæ | 3 | 1.32 | 3 | 1.32 | | | 655 | 2.42 | 244 | .90 | 1 | .004 |
| Wounds, contused, lacerated, and punctured | 140 | 61.67 | | | | | 8,541 | 31.50 | 37 | .14 | 5 | .02 |
| Wounds, incised | 54 | 23.79 | | | | | 4,430 | 16.34 | 22 | .08 | 7 | .03 |
| Wounds, gunshot | 15 | 6.61 | 2 | .88 | 11 | 4.84 | 797 | 2.94 | 158 | .58 | 262 | .97 |
| Secondary results of injury | 4 | 1.76 | 1 | .44 | | | 621 | 2.29 | 78 | .29 | | |
| Other injuries | 52 | 22.91 | | | | | 7,079 | 26.11 | 65 | .24 | 104 | .38 |
| Total for injuries | 643 | 283.28 | 6 | 2.64 | 16 | 7.04 | 64,693 | 238.57 | 839 | 3.09 | 594 | 2.19 |
| Total for diseases and injuries | 2,532 | 1,115.42 | 55 | 24.21 | 38 | 16.72 | 306,494 | 1,130.27 | 4,494 | 16.57 | 1,813 | 6.69 |

**TABLE VIII.**—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888-1897*—Continued.

| | White troops. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1898. | | | | | | 1899. | | | | | |
| Mean strength | 140,395. | | | | | | 98,635. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 47 | 0.33 | | | 7 | 0.05 | 21 | 0.21 | | | | |
| Measles | 7,258 | 51.70 | 7 | 0.05 | 70 | .50 | 2,652 | 26.89 | 3 | 0.03 | 37 | 0.38 |
| Smallpox | 92 | .66 | | | 23 | .16 | 333 | 3.38 | | | 84 | .85 |
| Vaccinia | 6,411 | 45.67 | 1 | .01 | | | 6,503 | 65.91 | 1 | .01 | 1 | .01 |
| Influenza | 4,018 | 28.62 | 2 | .01 | | | 5,271 | 53.44 | | | 4 | .04 |
| Dengue | 191 | 1.36 | | | 2 | .01 | 1,501 | 15.22 | | | | |
| Mumps | 2,018 | 14.37 | 2 | .01 | | | 1,651 | 16.74 | | | | |
| Diphtheria | 57 | .41 | | | 4 | .03 | 57 | .58 | | | 5 | .05 |
| Typhoid fever | 20,719 | 147.58 | 44 | .31 | 2,142 | 15.26 | 2,147 | 21.77 | 24 | .24 | 249 | 2.52 |
| Yellow fever | 937 | 6.67 | | | 108 | .77 | 254 | 2.58 | | | 54 | .55 |
| Cerebro-spinal fever | 139 | .99 | 9 | .06 | 79 | .56 | 60 | .61 | 3 | .03 | 35 | .35 |
| Malarial fever, intermittent | 56,374 | 401.54 | | | 9 | .06 | 38,124 | 386.51 | 3 | .03 | | |
| Malarial fever, remittent | 24,846 | 176.94 | 25 | .18 | 129 | .92 | 16,810 | 170.42 | 7 | .07 | 13 | .13 |
| Malarial fever, pernicious | 464 | 3.31 | 5 | .04 | 164 | 1.17 | 138 | 1.40 | | | 49 | .50 |
| Malarial cachexia | 2,911 | 20.74 | 31 | .22 | 20 | .14 | 1,705 | 17.28 | 102 | 1.03 | 18 | .18 |
| Fever, undetermined | 3,952 | 28.15 | | | 1 | .01 | 2,648 | 26.85 | | | | |
| Erysipelas | 88 | .63 | | | | | 83 | .84 | | | 4 | .04 |
| Septicæmia and tetanus | 22 | .16 | | | 16 | .11 | 24 | .24 | 1 | .01 | 7 | .07 |
| Rheumatic fever | 615 | 4.38 | 10 | .07 | | | 633 | 6.42 | 7 | .07 | 3 | .03 |
| Consumption | 513 | 3.65 | 160 | 1.14 | 37 | .26 | 391 | 3.96 | 181 | 1.83 | 47 | .48 |
| Cancer | 20 | .14 | 2 | .01 | 5 | .04 | 23 | .23 | 4 | .04 | 3 | .03 |
| Syphilis and results | 1,318 | 9.39 | 86 | .61 | 4 | .03 | 1,321 | 13.39 | 193 | 1.96 | | |
| Gonorrhea and results | 7,185 | 51.18 | 47 | .33 | 1 | .01 | 7,709 | 78.16 | 55 | .56 | 1 | .01 |
| Chancroid and results | 2,514 | 17.91 | 7 | .05 | | | 3,654 | 37.04 | 12 | .12 | | |
| Infections, others | 411 | 2.93 | 7 | .05 | 6 | .04 | 238 | 2.41 | 3 | .03 | 3 | .03 |
| Total infectious diseases | 143,120 | 1,019.41 | 445 | 3.17 | 2,827 | 20.13 | 93,951 | 952.48 | 599 | 6.06 | 617 | 6.25 |
| Anæmia | 492 | 3.50 | 6 | .04 | 4 | .03 | 478 | 4.85 | 15 | .15 | 1 | .01 |
| Nutrition, others | 536 | 3.82 | 24 | .17 | 2 | .01 | 121 | 1.23 | 19 | .19 | 3 | .03 |
| Total diseases of nutrition | 1,028 | 7.32 | 30 | .21 | 6 | .04 | 599 | 6.08 | 34 | .34 | 4 | .04 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alcoholism | 1,257 | 8.95 | 24 | .17 | 24 | .17 | 1,490 | 15.11 | 7 | .07 | 28 | .28 |
| Brain and spinal cord | 979 | 6.97 | 88 | .63 | 41 | .29 | 557 | 5.65 | 95 | .96 | 17 | .17 |
| Insanity | 150 | 1.07 | 95 | .68 | 3 | .02 | 178 | 1.80 | 86 | .87 | ........ | ........ |
| Meningitis | 66 | .47 | 1 | .01 | 31 | .22 | 39 | .40 | 6 | .06 | 16 | .16 |
| Poisoning, narcotic | 61 | .43 | 7 | .05 | 9 | .06 | 44 | .45 | 6 | .06 | 12 | .12 |
| Nervous system, others | 3,526 | 25.12 | 48 | .34 | 7 | .05 | 2,407 | 24.40 | 73 | .74 | 2 | .02 |
| Total diseases of the nervous system | 6,039 | 43.01 | 263 | 1.88 | 115 | .81 | 4,715 | 47.81 | 273 | 2.76 | 75 | .75 |
| Poisoning, irritant | 263 | 1.87 | 1 | .01 | 11 | .08 | 208 | 2.11 | ........ | ........ | 6 | .06 |
| Tonsillitis, pharyngitis, and sore throat | 5,061 | 36.05 | 2 | .01 | 1 | .01 | 4,351 | 44.11 | ........ | ........ | 2 | .02 |
| Peritonitis | 108 | .77 | ........ | ........ | 27 | .19 | 43 | .44 | ........ | ........ | 14 | .14 |
| Dyspepsia, colic, and constipation | 12,783 | 91.04 | 27 | .19 | 4 | .03 | 7,174 | 72.74 | 10 | .10 | ........ | ........ |
| Gastritis | 2,808 | 20.00 | 9 | .06 | 5 | .04 | 2,813 | 28.52 | 10 | .10 | 6 | .06 |
| Diarrheal diseases | 56,192 | 400.24 | 65 | .46 | 202 | 1.44 | 39,040 | 395.79 | 94 | .95 | 222 | 2.25 |
| Enteritis | 3,008 | 21.43 | 5 | .04 | 26 | .19 | 972 | 9.85 | 6 | .06 | 16 | .16 |
| Perityphlitis and appendicitis | 345 | 2.46 | 12 | .09 | 31 | .22 | 248 | 2.51 | 9 | .09 | 16 | .16 |
| Digestive system, others | 6,063 | 43.19 | 52 | .37 | 27 | .19 | 3,352 | 33.98 | 46 | .47 | 25 | .25 |
| Total diseases of the digestive system | 86,631 | 617.05 | 173 | 1.23 | 334 | 2.39 | 58,201 | 590.05 | 175 | 1.77 | 307 | 3.10 |
| Heart, diseases of | 565 | 4.02 | 108 | .77 | 32 | .23 | 519 | 5.26 | 140 | 1.42 | 28 | .28 |
| Arteries and veins | 235 | 1.67 | 29 | .21 | 2 | .01 | 240 | 2.43 | 31 | .31 | 5 | .05 |
| Total diseases of the circulatory system | 800 | 5.69 | 137 | .98 | 34 | .24 | 759 | 7.69 | 171 | 1.73 | 33 | .33 |
| Bronchitis | 11,880 | 84.62 | 39 | .28 | 2 | .01 | 7,651 | 77.57 | 11 | .11 | ........ | ........ |
| Pneumonia | 961 | 6.85 | 12 | .09 | 123 | .88 | 563 | 5.71 | 9 | .09 | 91 | .92 |
| Pleurisy | 531 | 3.78 | 7 | .05 | 6 | .04 | 370 | 3.75 | 9 | .09 | 2 | .02 |
| Respiratory system, others | 5,912 | 42.11 | 24 | .17 | 6 | .04 | 3,589 | 36.39 | 24 | .24 | 9 | .09 |
| Total diseases of the respiratory organs | 19,284 | 137.36 | 82 | .59 | 137 | .97 | 12,173 | 123.42 | 53 | .53 | 102 | 1.03 |
| Kidneys, diseases of | 321 | 2.29 | 24 | .17 | 21 | .15 | 225 | 2.28 | 15 | .15 | 27 | .27 |
| Varicocele | 378 | 2.69 | 26 | .19 | ........ | ........ | 414 | 4.20 | 16 | .16 | ........ | ........ |
| Genito-urinary, others | 1,155 | 8.23 | 20 | .14 | 3 | .02 | 1,253 | 12.70 | 24 | .24 | ........ | ........ |
| Total diseases of the genito-urinary system | 1,854 | 13.21 | 70 | .50 | 24 | .17 | 1,892 | 19.18 | 55 | .55 | 27 | .27 |
| Adenitis | 441 | 3.14 | 4 | .03 | ........ | ........ | 636 | 6.45 | 2 | .02 | ........ | ........ |
| Lymphatic system, others | 116 | .83 | 3 | .02 | ........ | ........ | 90 | .91 | 4 | .04 | ........ | ........ |
| Total diseases of the lymphatic system | 557 | 3.97 | 7 | .05 | ........ | ........ | 726 | 7.36 | 6 | .06 | ........ | ........ |
| Rheumatism, muscular | 7,536 | 53.68 | 72 | .51 | ........ | ........ | 4,916 | 49.85 | 48 | .49 | ........ | ........ |
| Osteitis and periostitis | 157 | 1.12 | 6 | .04 | ........ | ........ | 184 | 1.87 | 7 | .07 | ........ | ........ |
| Arthritis and synovitis | 862 | 6.14 | 28 | .20 | ........ | ........ | 760 | 7.71 | 17 | .17 | ........ | ........ |
| Rheumatism, chronic articular | 714 | 5.09 | 73 | .52 | 1 | .01 | 849 | 8.61 | 80 | .81 | ........ | ........ |
| Muscles, bones, and joints, others | 328 | 2.34 | 35 | .25 | ........ | ........ | 323 | 3.27 | 43 | .44 | ........ | ........ |
| Total diseases of the muscles, bones, and joints | 9,597 | 68.37 | 214 | 1.52 | 1 | .01 | 7,032 | 71.31 | 195 | 1.98 | ........ | ........ |

TABE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888-1897*—Continued.

| | White troops. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1898. | | | | | | 1899. | | | | | |
| Mean strength | 140,395. | | | | | | 98,635. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total diseases of the integumentary system, all | 7,285 | 51.89 | 19 | 0.14 | 4 | 0.03 | 12,449 | 126.21 | 17 | 0.17 | 1 | 0.01 |
| Total diseases of the eye | 1,330 | 9.47 | 46 | .33 | ...... | ...... | 1,276 | 12.94 | 60 | .61 | ...... | ...... |
| Total diseases of the ear | 1,038 | 7.39 | 44 | .31 | 3 | .02 | 1,281 | 12.99 | 85 | .86 | 2 | .02 |
| Total diseases of the nose | 83 | .59 | 6 | .04 | ...... | ...... | 129 | 1.31 | 2 | .02 | ...... | ...... |
| Total unclassified | 3,120 | 22.22 | 54 | .38 | 44 | .31 | 758 | 7.68 | 1 | .01 | 1 | .01 |
| Total for diseases | 281,766 | 2,006.95 | 1,590 | 11.33 | 3,529 | 25.14 | 195,941 | 1,986.51 | 1,726 | 17.50 | 1,169 | 11.85 |
| Drowning | 1 | .01 | ...... | ...... | 32 | .23 | ...... | ...... | ...... | ...... | 77 | .78 |
| Exhaustion from exposure and fatigue | 1,398 | 9.96 | 9 | .06 | 11 | .08 | 1,455 | 14.75 | ...... | ...... | ...... | ...... |
| Heat stroke | 532 | 3.79 | 12 | .09 | 8 | .06 | 201 | 2.04 | 2 | .02 | ...... | ...... |
| Lightning | 32 | .23 | ...... | ...... | 5 | .04 | 7 | .07 | 1 | .01 | 1 | .01 |
| Venomous bites, stings, and wounds | 438 | 3.12 | 1 | .01 | ...... | ...... | 800 | 8.11 | ...... | ...... | ...... | ...... |
| Abrasions, blisters, burns, and scalds | 1,862 | 13.26 | 1 | .01 | ...... | ...... | 1,608 | 16.30 | ...... | ...... | ...... | ...... |
| Compression and concussion of brain | 81 | .58 | 2 | .01 | 6 | .04 | 39 | .40 | ...... | ...... | 5 | .05 |
| Contusions and sprains | 7,004 | 49.89 | 28 | .20 | 1 | .01 | 6,399 | 64.88 | 10 | .10 | ...... | ...... |
| Dislocations | 259 | 1.84 | 9 | .06 | 1 | .01 | 227 | 2.30 | 4 | .04 | ...... | ...... |
| Fractures (not shot) | 756 | 5.39 | 25 | .18 | 16 | .11 | 630 | 6.39 | 37 | .38 | 13 | .13 |
| Herniæ | 1,012 | 7.21 | 166 | 1.18 | 2 | .01 | 768 | 7.79 | 118 | 1.20 | 1 | .01 |
| Wounds, contused, lacerated, and punctured | 1,940 | 13.82 | 6 | .04 | 3 | .02 | 2,139 | 21.69 | 3 | .03 | 1 | .01 |
| Wounds, incised | 1,107 | 7.88 | 2 | .01 | 9 | .06 | 1,181 | 11.97 | 6 | .06 | 21 | .21 |
| Wounds, gunshot | 1,766 | 12.58 | 110 | .78 | 270 | 1.92 | 2,201 | 22.31 | 211 | 2.14 | 523 | 5.30 |
| Secondary results of injury | 164 | 1.17 | 21 | .15 | 2 | .01 | 313 | 3.17 | 34 | .34 | 1 | .01 |
| Other injuries | 1,108 | 7.89 | 13 | .09 | 42 | .30 | 669 | 6.78 | 16 | .16 | 16 | .16 |
| Total for injuries | 19,460 | 138.61 | 405 | 2.88 | 408 | 2.91 | 18,637 | 188.95 | 442 | 4.48 | 661 | 6.70 |
| Total for diseases and injuries | 301,226 | 2,145.56 | 1,995 | 14.21 | 3,937 | 28.05 | 214,578 | 2,175.47 | 2,168 | 21.98 | 1,830 | 18.55 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888-1897*—Continued.

| | Colored troops. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1898. | | | | | | 1899. | | | | | |
| Mean strength | 7,400. | | | | | | 6,911. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | | | | | | | 1 | 0.14 | | | | |
| Measles | 129 | 17.43 | | | | | 103 | 14.90 | | | | |
| Smallpox | | | | | | | 14 | 2.03 | | | | |
| Vaccinia | 505 | 68.24 | | | | | 392 | 56.73 | | | | |
| Influenza | 224 | 30.27 | | | | | 359 | 51.95 | | | 1 | 0.14 |
| Dengue | 58 | 7.84 | | | | | 101 | 14.62 | | | | |
| Mumps | 57 | 7.70 | | | | | 188 | 27.20 | | | | |
| Diphtheria | 2 | .27 | | | | | 1 | .14 | | | | |
| Typhoid fever | 207 | 27.97 | | | 50 | 6.70 | 37 | 5.35 | | | 9 | 1.30 |
| Yellow fever | 232 | 31.35 | | | 36 | 4.86 | 8 | 1.16 | | | 1 | .14 |
| Cerebro-spinal fever | 1 | .14 | | | | | 4 | .58 | | | 6 | .87 |
| Malarial fever, intermittent | 4,763 | 643.65 | 1 | 0.14 | | | 3,160 | 457.25 | 1 | 0.14 | | |
| Malarial fever, remittent | 719 | 97.16 | | | 6 | .81 | 392 | 56.73 | | | 3 | .43 |
| Malarial fever, pernicious | 28 | 3.78 | | | 21 | 2.84 | 12 | 1.74 | | | 9 | 1.30 |
| Malarial cachexia | 311 | 42.03 | 1 | .14 | | | 286 | 41.38 | 3 | .43 | 2 | .29 |
| Fever, undetermined | 200 | 27.03 | | | | | 41 | 5.93 | | | | |
| Erysipelas | 6 | .81 | | | 1 | .14 | 9 | 1.30 | | | | |
| Septicæmia and tetanus | | | | | | | 1 | .14 | | | 1 | .14 |
| Rheumatic fever | 58 | 7.84 | 4 | .54 | 1 | .14 | 65 | 9.41 | 2 | .29 | | |
| Consumption | 34 | 4.59 | 5 | .68 | 1 | .14 | 29 | 4.20 | 9 | 1.30 | 10 | 1.45 |
| Cancer | 1 | .14 | | | 1 | .14 | | | | | | |
| Syphilis and results | 209 | 28.24 | 11 | 1.49 | | | 155 | 22.43 | 12 | 1.74 | | |
| Gonorrhea and results | 498 | 67.29 | | | | | 759 | 109.82 | 3 | .43 | | |
| Chancroid and results | 400 | 54.05 | 3 | .41 | | | 440 | 63.67 | 1 | .14 | | |
| Infections, others | 12 | 1.62 | | | 1 | .14 | 46 | 6.66 | 3 | .43 | 1 | .14 |
| Total infectious diseases | 8,654 | 1169.44 | 25 | 3.40 | 118 | 15.91 | 6,603 | 955.46 | 34 | 4.90 | 43 | 6.20 |
| Anæmia | 8 | 1.08 | | | | | 10 | 1.45 | | | | |
| Nutrition, others | 6 | .81 | | | 1 | .14 | 5 | .72 | 2 | .29 | 1 | .14 |
| Total diseases of nutrition | 14 | 1.89 | | | 1 | .14 | 15 | 2.17 | 2 | .29 | 1 | .14 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888–1897.*

| | Decade 1888-1897. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | White troops. | | | | | | Colored troops. | | | | | |
| ean strength | 24,548. | | | | | | 2,342. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 49 | 0.20 | | | | | | | | | | |
| Measles | 1,453 | 5.92 | | | 1 | 0.004 | 64 | 2.73 | | | | |
| Smallpox | 21 | .09 | | | 3 | .01 | 4 | .17 | | | | |
| Vaccinia | 7,913 | 32.24 | 1 | 0.004 | | | 553 | 23.61 | | | | |
| Influenza | 14,228 | 57.96 | | | 43 | .18 | 1,766 | 75.41 | | | 4 | 0.17 |
| Dengue | 970 | 3.95 | | | | | | | | | | |
| Mumps | 1,154 | 4.70 | | | | | 193 | 8.24 | | | | |
| Diphtheria | 124 | .51 | | | 2 | .01 | 21 | .90 | | | | |
| Typhoid fever | 1,273 | 5.19 | 3 | .01 | 138 | .56 | 69 | 2.95 | | | 10 | .43 |
| Yellow fever | 7 | .03 | | | 3 | .01 | | | | | | |
| Cerebro-spinal fever | 12 | .05 | 1 | .004 | 5 | .02 | 1 | .04 | | | | |
| Malarial fever, intermittent | 16,353 | 66.62 | | | | | 598 | 25.53 | | | | |
| Malarial fever, remittent | 3,572 | 14.55 | | | 13 | .05 | 272 | 11.61 | | | 6 | .26 |
| Malarial fever, pernicious | 14 | .06 | | | 6 | .02 | 4 | .17 | | | 2 | .09 |
| Malarial cachexia | 644 | 2.66 | 16 | .07 | 1 | .004 | 82 | 3.50 | 1 | 0.04 | | |
| Fever, undetermined | 2,908 | 11.85 | | | | | 3.42 | 14.60 | | | | |
| Erysipelas | 446 | 1.82 | | | 14 | .06 | 21 | .90 | | | 3 | .13 |
| Septicæmia and tetanus | 10 | .04 | | | 10 | .04 | 1 | .04 | | | 1 | .04 |
| Rheumatic fever | 1,180 | 4.81 | 12 | .05 | 2 | .01 | 107 | 4.57 | | | | |
| Consumption | 601 | 2.45 | 340 | 1.39 | 100 | .41 | 83 | 3.54 | 42 | 1.79 | 24 | 1.02 |
| Cancer | 50 | .20 | 7 | .03 | 28 | .11 | 4 | .17 | 1 | .04 | 1 | .04 |
| Syphilis and results | 3,420 | 13.93 | 320 | 1.30 | 6 | .02 | 392 | 16.74 | 61 | 2.60 | 1 | .04 |
| Gonorrhea and results | 11,064 | 45.06 | 59 | .24 | | | 942 | 40.23 | 2 | .09 | | |
| Chancroid and results | 2,750 | 11.20 | 2 | .01 | | | 378 | 16.14 | | | | |
| Infections, others | 563 | 2.29 | 19 | .08 | 12 | .05 | 40 | 1.71 | 2 | .09 | 1 | .04 |
| Total infectious diseases | 70,769 | 288.29 | 780 | 3.18 | 387 | 1.58 | 5,937 | 253.50 | 109 | 4.65 | 53 | 2.26 |
| Anæmia | 198 | .81 | 13 | .05 | 1 | .004 | 11 | .47 | 2 | .09 | | |
| Nutrition, others | 300 | 1.22 | 102 | .42 | 10 | .04 | 26 | 1.11 | 10 | .43 | 1 | .04 |
| Total diseases of nutrition | 498 | 2.03 | 115 | .47 | 11 | .04 | 37 | 1.58 | 12 | .51 | 1 | .04 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alcoholism | 8,568 | 34.91 | 11 | .04 | 58 | .24 | 114 | 4.87 | 1 | .04 | | |
| Brain and spinal cord | 1,237 | 5.04 | 188 | .77 | 63 | .26 | 84 | 8.59 | 14 | .60 | 7 | .30 |
| Insanity | 301 | 1.23 | 267 | 1.09 | 8 | .03 | 16 | .68 | 14 | .60 | 1 | .04 |
| Meningitis | 5 | .02 | | | 2 | .01 | | | | | | |
| Poisoning, narcotic | 141 | .57 | 14 | .06 | 12 | .05 | 5 | .21 | 1 | .04 | | |
| Nervous system, others | 8,401 | 34.23 | 155 | .63 | 4 | .02 | 1,099 | 46.92 | 6 | .26 | | |
| Total diseases of the nervous system | 18,658 | 75.99 | 635 | 2.59 | 147 | .60 | 1,318 | 56.28 | 36 | 1.54 | 8 | .34 |
| Poisoning, irritant | 238 | .97 | | | 51 | .21 | 8 | .34 | | | 1 | .04 |
| Tonsillitis, pharyngitis, and sore throat | 15,757 | 64.19 | 2 | .01 | 1 | .004 | 1,813 | 77.41 | | | | |
| Peritonitis | 59 | .24 | 5 | .02 | 20 | .08 | 2 | .09 | | | | |
| Dyspepsia, colic, and constipation | 12,487 | 50.87 | 32 | .13 | 1 | .004 | 1,540 | 65.75 | 5 | .21 | | |
| Gastritis | 796 | 3.24 | 22 | .09 | 12 | .05 | 59 | 2.52 | 2 | .09 | 2 | .09 |
| Diarrheal diseases | 22,827 | 92.99 | 35 | .14 | 15 | .06 | 1,770 | 75.58 | 3 | .13 | 2 | .09 |
| Enteritis | 431 | 1.76 | 5 | .02 | 16 | .07 | 29 | 1.24 | | | | |
| Peritypblitis and appendicitis | 122 | .50 | 3 | .01 | 10 | .04 | 13 | .56 | | | 2 | .09 |
| Digestive system, others | 7,046 | 28.71 | 54 | .22 | 51 | .21 | 859 | 36.68 | 6 | .26 | 3 | .13 |
| Total diseases of the digestive system | 59,763 | 243.46 | 158 | .64 | 177 | .72 | 6,093 | 260.17 | 16 | .69 | 10 | .44 |
| Heart, diseases of | 1,134 | 4.62 | 292 | 1.19 | 84 | .34 | 87 | 3.72 | 24 | 1.02 | 6 | .26 |
| Arteries and veins | 816 | 1.29 | 84 | .34 | 23 | .09 | 14 | .60 | 2 | .09 | 8 | .34 |
| Total diseases of the circulatory system | 1,450 | 5.91 | 376 | 1.53 | 107 | .44 | 101 | 4.31 | 26 | 1.11 | 14 | .60 |
| Bronchitis | 15,420 | 62.87 | 49 | .20 | 4 | .02 | 1,528 | 65.24 | 2 | .09 | | |
| Pneumonia | 832 | 3.39 | 12 | .05 | 140 | .57 | 153 | 6.53 | 2 | .09 | 29 | 1.24 |
| Pleurisy | 478 | 1.95 | 15 | .06 | 6 | .02 | 72 | 3.07 | 1 | .04 | 1 | .04 |
| Respiratory system, others | 6,773 | 27.59 | 45 | .18 | 14 | .06 | 738 | 31.51 | 2 | .09 | 4 | .17 |
| Total diseases of the respiratory organs | 23,503 | 95.74 | 121 | .49 | 164 | .67 | 2,491 | 106.36 | 7 | .31 | 34 | 1.45 |
| Kidneys, diseases of | 377 | 1.54 | 43 | .18 | 57 | .23 | 52 | 2.22 | 5 | .21 | 7 | .30 |
| Varicocele | 215 | .88 | 37 | .15 | | | 19 | .81 | 2 | .09 | | |
| Genito-urinary, others | 1,643 | 6.69 | 76 | .31 | 2 | .01 | 235 | 10.03 | 8 | .34 | | |
| Total diseases of the genito-urinary system | 2,235 | 9.11 | 156 | .64 | 59 | .24 | 306 | 13.06 | 15 | .64 | 7 | .30 |
| Adenitis | 876 | 3.57 | 8 | .03 | | | 110 | 4.70 | | | | |
| Lymphatic system, others | 144 | .59 | 5 | .02 | 2 | .01 | 14 | .60 | | | | |
| Total diseases of the lymphatic system | 1,020 | 4.16 | 13 | .05 | 2 | .01 | 124 | 5.29 | | | | |
| Rheumatism, muscular | 11,002 | 44.84 | 141 | .57 | | | 1,626 | 69.43 | 15 | .64 | | |
| Osteitis and periostitis | 171 | .70 | 19 | .08 | | | 22 | .94 | 5 | .21 | | |
| Arthritis and synovitis | 717 | 2.92 | 113 | .46 | | | 97 | 4.14 | 12 | .51 | | |
| Rheumatism, chronic articular | 3,384 | 13.79 | 172 | .70 | 2 | .01 | 589 | 25.15 | 20 | .85 | | |
| Muscles, bones, and joints, others | 724 | 2.95 | 80 | .33 | 1 | .004 | 77 | 3.29 | 8 | .34 | 1 | .04 |
| Total diseases of the muscles, bones, and joints | 15,998 | 65.18 | 525 | 2.14 | 3 | .01 | 2,411 | 102.95 | 60 | 2.52 | 1 | .04 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratio per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888-1897*—Continued.

| | Decade 1888-1897. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | White troops. | | | | | | Colored troops. | | | | | |
| Mean strength | 24,548 | | | | | | 2,342 | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total diseases of the integumentary system | 18,519 | 75.44 | 42 | 0.18 | 3 | 0.01 | 1,068 | 45.60 | 4 | 0.17 | 1 | 0.04 |
| Total diseases of the eye | 3,770 | 15.36 | 207 | .84 | | | 584 | 24.94 | 20 | .85 | | |
| Total diseases of the ear | 1,690 | 6.88 | 123 | .50 | 2 | .01 | 77 | 3.29 | 5 | .21 | | |
| Total diseases of the nose | 435 | 1.77 | 29 | .12 | 1 | .004 | 25 | 1.07 | 2 | .09 | | |
| Total unclassified | 896 | 3.65 | 14 | .06 | 3 | .01 | 141 | 6.02 | | | 2 | .09 |
| Total for diseases | 219,199 | 892.94 | 3,294 | 13.42 | 1,066 | 4.34 | 20,713 | 884.42 | 312 | 13.32 | 131 | 5.59 |
| Drowning | | | | | 134 | .55 | | | | | 8 | .34 |
| Exhaustion from exposure and fatigue | 286 | 1.17 | | | 4 | .02 | 16 | .68 | | | | |
| Heat stroke | 503 | 2.05 | 6 | .02 | 6 | .02 | 20 | .85 | 1 | .04 | | |
| Lightning | 2 | .01 | | | 1 | .004 | 1 | .04 | | | | |
| Venomous bites, stings, and wounds | 460 | 1.87 | 2 | .01 | | | 47 | 2.01 | | | | |
| Abrasions, blisters, burns, and scalds | 4,726 | 19.25 | 4 | .02 | | | 292 | 11.61 | | | | |
| Compression and concussion of brain | 147 | .60 | 7 | .03 | 15 | .06 | 15 | .64 | | | 2 | .09 |
| Contusions and sprains | 30,164 | 122.88 | 58 | .24 | 3 | .01 | 3,108 | 132.71 | 4 | .17 | 1 | .04 |
| Dislocations | 633 | 2.58 | 23 | .09 | 1 | .004 | 43 | 1.84 | 3 | .13 | | |
| Fractures (not shot) | 1,623 | 6.61 | 121 | .49 | 32 | .13 | 129 | 5.51 | 6 | .26 | 3 | .13 |
| Herniæ | 588 | 2.40 | 220 | .90 | 1 | .004 | 64 | 2.73 | 21 | .90 | | |
| Wounds, contused, lacerated, and punctured | 7,425 | 30.25 | 33 | .13 | 5 | .02 | 976 | 41.68 | 4 | .17 | | |
| Wounds, incised | 3,936 | 16.04 | 21 | .09 | 5 | .02 | 440 | 18.79 | 1 | .04 | 2 | .09 |
| Wounds, gunshot | 661 | 2.69 | 142 | .58 | 214 | .87 | 121 | 5.17 | 14 | .60 | 37 | 1.58 |
| Secondary results of injury | 543 | 2.21 | 68 | .28 | | | 74 | 3.16 | 9 | .38 | | |
| Other injuries | 6,139 | 25.01 | 56 | .23 | 101 | .41 | 888 | 37.92 | 9 | .38 | 3 | .13 |
| Total for injuries | 57,836 | 235.61 | 761 | 3.10 | 522 | 2.13 | 6,214 | 265.35 | 72 | 3.07 | 56 | 2.39 |
| Total for diseases and injuries | 277,035 | 1,128.55 | 4,055 | 16.52 | 1,588 | 6.47 | 26,927 | 1,149.76 | 384 | 16.40 | 187 | 7.98 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888-1897*—Continued.

| | Decade 1888-1897. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Indian troops. | | | | | | Total army. | | | | | |
| Mean strength | 227. | | | | | | 27,117. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | | | | | | | 49 | 0.18 | | | | |
| Measles | 8 | 3.52 | | | | | 1,525 | 5.62 | | | 1 | 0.004 |
| Smallpox | | | | | | | 25 | .09 | | | 3 | .01 |
| Vaccinia | 226 | 99.56 | | | | | 8,692 | 32.06 | 1 | 0.004 | | |
| Influenza | 79 | 34.81 | | | | | 16,073 | 59.27 | | | 47 | .17 |
| Dengue | | | | | | | 970 | 3.58 | | | | |
| Mumps | 42 | 18.50 | | | | | 1,389 | 5.12 | | | | |
| Diphtheria | | | | | | | 145 | .53 | | | 2 | .01 |
| Typhoid fever | 1 | .44 | | | | | 1,343 | 4.95 | 3 | .01 | 148 | .55 |
| Yellow fever | | | | | | | 7 | .03 | | | 3 | .01 |
| Cerebro-spinal fever | | | | | | | 13 | .05 | 1 | .004 | 5 | .02 |
| Malarial fever, intermittent | 66 | 29.08 | | | | | 17,017 | 62.76 | | | | |
| Malarial fever, remittent | 4 | 1.76 | | | | | 3,848 | 14.19 | | | 19 | .07 |
| Malarial fever, pernicious | | | | | | | 18 | .07 | | | 8 | .03 |
| Malarial cachexia | | | | | | | 726 | 2.68 | 17 | .06 | 1 | .004 |
| Fever, undetermined | 13 | 5.73 | | | | | 3,263 | 12.03 | | | | |
| Erysipelas | 13 | 5.73 | | | | | 480 | 1.77 | | | 17 | .06 |
| Septicæmia and tetanus | | | | | | | 11 | .04 | | | 11 | .04 |
| Rheumatic fever | 9 | 3.96 | 1 | 0.44 | | | 1,296 | 4.78 | 13 | .05 | 2 | .01 |
| Consumption | 54 | 23.79 | 26 | 11.41 | 16 | 7.04 | 738 | 2.72 | 408 | 1.50 | 140 | .52 |
| Cancer | | | | | | | 54 | .20 | 8 | .03 | 29 | .11 |
| Syphilis and results | 33 | 14.54 | 6 | 2.64 | | | 3,845 | 14.18 | 387 | 1.43 | 7 | .03 |
| Gonorrhea and results | 149 | 65.64 | | | | | 12,145 | 44.79 | 61 | .22 | | |
| Chancroid and results | 26 | 11.45 | | | | | 3,154 | 11.63 | 2 | .01 | | |
| Infections, others | 21 | 9.25 | 2 | .88 | | | 624 | 2.30 | 23 | .08 | 13 | .05 |
| Total infectious diseases | 744 | 327.75 | 35 | 15.37 | 16 | 7.04 | 77,450 | 285.62 | 924 | 3.41 | 456 | 1.68 |
| Anæmia | | | | | | | 209 | .77 | 15 | .06 | 1 | .004 |
| Nutrition, others | 1 | .44 | | | | | 327 | 1.21 | 112 | .41 | 11 | .04 |
| Total diseases of nutrition | 1 | .44 | | | | | 536 | 1.98 | 127 | .47 | 12 | .04 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888-1897*—Continued.

| | Decade 1888-1897. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Indian troops. | | | | | | Total army. | | | | | |
| Mean strength | 227. | | | | | | 27,117. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Alcoholism | 10 | 4.41 | | | | | 8,692 | 32.06 | 12 | 0.04 | 58 | 0.21 |
| Brain and spinal cord | 3 | 1.32 | 1 | 0.44 | 1 | 0.44 | 1,324 | 4.88 | 203 | .75 | 71 | .26 |
| Insanity | | | | | | | 317 | 1.17 | 281 | 1.04 | 9 | .03 |
| Meningitis | | | | | | | 5 | .02 | | | 2 | .01 |
| Poisoning, narcotic | 1 | .44 | | | | | 147 | .54 | 15 | .06 | 12 | .04 |
| Nervous system, others | 71 | 31.28 | 2 | .88 | | | 9,571 | 35.30 | 163 | .60 | 4 | .01 |
| Total diseases of the nervous system | 85 | 37.45 | 3 | 1.32 | 1 | .44 | 20,056 | 73.96 | 674 | 2.49 | 156 | .58 |
| Poisoning, irritant | | | | | | | 246 | .91 | | | 52 | .19 |
| Tonsillitis, pharyngitis, and sore throat | 121 | 53.30 | | | | | 17,691 | 65.24 | 2 | .01 | 1 | .004 |
| Peritonitis | | | | | | | 61 | .22 | 5 | .02 | 20 | .07 |
| Dyspepsia, colic, and constipation | 132 | 58.15 | | | | | 14,159 | 52.21 | 37 | .14 | 1 | .004 |
| Gastritis | 3 | 1.32 | | | | | 858 | 3.16 | 24 | .09 | 14 | .05 |
| Diarrheal diseases | 97 | 42.74 | | | | | 24,694 | 91.06 | 38 | .14 | 17 | .06 |
| Enteritis | 1 | .44 | | | | | 461 | 1.70 | 5 | .02 | 16 | .06 |
| Perityphlitis and appendicitis | | | | | | | 135 | .50 | 3 | .01 | 12 | .04 |
| Digestive system, others | 33 | 14.54 | | | | | 7,938 | 29.28 | 60 | .22 | 54 | .20 |
| Total diseases of the digestive system | 387 | 170.50 | | | | | 66,243 | 244.29 | 174 | .64 | 187 | .69 |
| Heart, diseases of | 5 | 2.20 | 2 | .88 | 1 | .44 | 1,226 | 4.52 | 318 | 1.17 | 91 | .34 |
| Arteries and veins | | | | | | | 330 | 1.22 | 86 | .32 | 31 | .11 |
| Total diseases of the circulatory system | 5 | 2.20 | 2 | .88 | 1 | .44 | 1,556 | 5.74 | 404 | 1.49 | 122 | .45 |
| Bronchitis | 121 | 53.30 | | | | | 17,069 | 62.94 | 51 | .19 | 4 | .01 |
| Pneumonia | 22 | 9.69 | | | 2 | .88 | 1,007 | 3.71 | 14 | .05 | 171 | .63 |
| Pleurisy | 5 | 2.20 | 2 | .88 | | | 555 | 2.05 | 18 | .07 | 7 | .03 |
| Respiratory system, others | 48 | 21.15 | 1 | .44 | | | 7,559 | 27.88 | 48 | .18 | 18 | .07 |
| Total diseases of the respiratory organs | 196 | 86.34 | 3 | 1.32 | 2 | .88 | 26,190 | 96.59 | 131 | .49 | 200 | .74 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidneys, diseases of | | | | | | | 429 | 1.58 | 48 | .18 | 64 | .24 |
| Varicocele | | | | | | | 234 | .86 | 39 | .14 | | |
| Genito-urinary, others | 16 | 7.05 | 1 | .44 | | | 1,894 | 6.98 | 85 | .31 | 2 | .01 |
| Total diseases of the genito-urinary system | 16 | 7.05 | 1 | .44 | | | 2,557 | 9.43 | 172 | .63 | 66 | .25 |
| Adenitis | 21 | 9.25 | | | | | 1,007 | 3.71 | 8 | .03 | | |
| Lymphatic system, others | 3 | 1.32 | | | | | 161 | .59 | 5 | .02 | 2 | .01 |
| Total diseases of the lymphatic system | 24 | 10.57 | | | | | 1,168 | 4.31 | 13 | .05 | 2 | .01 |
| Rheumatism, muscular | 81 | 35.69 | | | | | 12,709 | 46.87 | 156 | .58 | | |
| Osteitis and periostitis | 1 | .44 | 1 | .44 | | | 194 | .72 | 25 | .09 | | |
| Arthritis and synovitis | 3 | 1.32 | | | | | 817 | 3.01 | 125 | .46 | | |
| Rheumatism, chronic articular | 18 | 7.93 | 2 | .88 | | | 3,991 | 14.72 | 194 | .72 | 2 | .01 |
| Muscles, bones, and joints, others | 5 | 2.20 | 1 | .44 | | | 806 | 2.97 | 89 | .33 | 2 | .01 |
| Total diseases of the muscles, bones, and joints | 108 | 47.57 | 4 | 1.76 | | | 18,517 | 68.29 | 589 | 2.17 | 4 | .02 |
| Total diseases of the integumentary system | 155 | 68.29 | | | | | 19,742 | 72.81 | 46 | .17 | 4 | .01 |
| Total diseases of the eye | 132 | 58.15 | 1 | .44 | | | 4,486 | 16.54 | 228 | .84 | | |
| Total diseases of the ear | 18 | 7.93 | | | 1 | .44 | 1,785 | 6.58 | 128 | .47 | 3 | .01 |
| Total diseases of the nose | 4 | 1.76 | | | | | 464 | 1.71 | 31 | .11 | 1 | .004 |
| Total unclassified | 14 | 6.17 | | | 1 | .44 | 1,051 | 3.88 | 14 | .05 | 6 | .02 |
| Total for diseases | 1,889 | 832.16 | 49 | 21.57 | 22 | 9.68 | 241,801 | 891.70 | 3,655 | 13.47 | 1,219 | 4.50 |
| Drowning | | | | | 1 | .44 | | | | | 143 | .53 |
| Exhaustion from exposure and fatigue | | | | | | | 302 | 1.11 | | | 4 | .01 |
| Heat stroke | | | | | | | 523 | 1.93 | 7 | .03 | 6 | .02 |
| Lightning | | | | | | | 3 | .01 | | | 1 | .004 |
| Venomous bites, stings, and wounds | 3 | 1.32 | | | | | 510 | 1.88 | 2 | .01 | | |
| Abrasions, blisters, burns, and scalds | 60 | 26.43 | | | | | 5,058 | 18.65 | 4 | .01 | | |
| Compression and concussion of brain | | | | | | | 162 | .60 | 7 | .03 | 17 | .06 |
| Contusions and sprains | 274 | 120.71 | | | | | 33,546 | 123.71 | 62 | .23 | 4 | .01 |
| Dislocations | 13 | 5.73 | | | | | 689 | 2.54 | 26 | .10 | 1 | .004 |
| Fractures (not shot) | 25 | 11.01 | | | 4 | 1.76 | 1,777 | 6.55 | 127 | .47 | 39 | .14 |
| Herniæ | 3 | 1.32 | 3 | 1.32 | | | 655 | 2.42 | 244 | .90 | 1 | .004 |
| Wounds, contused, lacerated, and punctured | 140 | 61.67 | | | | | 8,541 | 31.50 | 37 | .14 | 5 | .02 |
| Wounds, incised | 54 | 23.79 | | | | | 4,430 | 16.34 | 22 | .08 | 7 | .03 |
| Wounds, gunshot | 15 | 6.61 | 2 | .88 | 11 | 4.84 | 797 | 2.94 | 158 | .58 | 262 | .97 |
| Secondary results of injury | 4 | 1.76 | 1 | .44 | | | 621 | 2.29 | 78 | .29 | | |
| Other injuries | 52 | 22.91 | | | | | 7,079 | 26.11 | 65 | .24 | 104 | .38 |
| Total for injuries | 643 | 283.28 | 6 | 2.64 | 16 | 7.04 | 64,693 | 238.57 | 839 | 3.09 | 594 | 2.19 |
| Total for diseases and injuries | 2,532 | 1,115.42 | 55 | 24.21 | 38 | 16.72 | 306,494 | 1,130.27 | 4,494 | 16.57 | 1,813 | 6.69 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888-1897*—Continued.

| | White troops. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1898. | | | | | | 1899. | | | | | |
| Mean strength | 140,395. | | | | | | 98,635. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Scarlet fever | 47 | 0.33 | | | 7 | 0.05 | 21 | 0.21 | | | | |
| Measles | 7,258 | 51.70 | 7 | 0.05 | 70 | .50 | 2,652 | 26.89 | 3 | 0.03 | 37 | 0.38 |
| Smallpox | 92 | .66 | | | 23 | .16 | 333 | 3.38 | | | 84 | .85 |
| Vaccinia | 6,411 | 45.67 | 1 | .01 | | | 6,503 | 65.91 | 1 | .01 | 1 | .01 |
| Influenza | 4,018 | 28.62 | 2 | .01 | | | 5,271 | 53.44 | | | 4 | .04 |
| Dengue | 191 | 1.36 | | | 2 | .01 | 1,501 | 15.22 | | | | |
| Mumps | 2,018 | 14.37 | 2 | .01 | | | 1,651 | 16.74 | | | | |
| Diphtheria | 57 | .41 | | | 4 | .03 | 57 | .58 | | | 5 | .05 |
| Typhoid fever | 20,719 | 147.58 | 44 | .31 | 2,142 | 15.26 | 2,147 | 21.77 | 24 | .24 | 249 | 2.52 |
| Yellow fever | 937 | 6.67 | | | 108 | .77 | 254 | 2.58 | | | 54 | .55 |
| Cerebro-spinal fever | 139 | .99 | 9 | .06 | 79 | .56 | 60 | .61 | 3 | .03 | 35 | .35 |
| Malarial fever, intermittent | 56,374 | 401.54 | | | 9 | .06 | 38,124 | 386.51 | 3 | .03 | | |
| Malarial fever, remittent | 24,846 | 176.94 | 25 | .18 | 129 | .92 | 16,810 | 170.42 | 7 | .07 | 13 | .13 |
| Malarial fever, pernicious | 464 | 3.31 | 5 | .04 | 164 | 1.17 | 138 | 1.40 | | | 49 | .50 |
| Malarial cachexia | 2,911 | 20.74 | 31 | .22 | 20 | .14 | 1,705 | 17.28 | 102 | 1.03 | 18 | .18 |
| Fever, undetermined | 3,952 | 28.15 | | | 1 | .01 | 2,648 | 26.85 | | | | |
| Erysipelas | 88 | .63 | | | | | 83 | .84 | | | 4 | .04 |
| Septicæmia and tetanus | 22 | .16 | | | 16 | .11 | 24 | .24 | 1 | .01 | 7 | .07 |
| Rheumatic fever | 615 | 4.38 | 10 | .07 | | | 633 | 6.42 | 7 | .07 | 3 | .03 |
| Consumption | 513 | 3.65 | 160 | 1.14 | 37 | .26 | 391 | 3.96 | 181 | 1.83 | 47 | .48 |
| Cancer | 20 | .14 | 2 | .01 | 5 | .04 | 23 | .23 | 4 | .04 | 3 | .03 |
| Syphilis and results | 1,318 | 9.39 | 86 | .61 | 4 | .03 | 1,321 | 13.39 | 193 | 1.96 | | |
| Gonorrhea and results | 7,185 | 51.18 | 47 | .33 | 1 | .01 | 7,709 | 78.16 | 55 | .56 | 1 | .01 |
| Chancroid and results | 2,514 | 17.91 | 7 | .05 | | | 3,654 | 37.04 | 12 | .12 | | |
| Infections, others | 411 | 2.93 | 7 | .05 | 6 | .04 | 238 | 2.41 | 3 | .03 | 3 | .03 |
| Total infectious diseases | 143,120 | 1,019.41 | 445 | 3.17 | 2,827 | 20.13 | 93,951 | 952.48 | 599 | 6.06 | 617 | 6.25 |
| Anæmia | 492 | 3.50 | 6 | .04 | 4 | .03 | 478 | 4.85 | 15 | .15 | 1 | .01 |
| Nutrition, others | 536 | 3.82 | 24 | .17 | 2 | .01 | 121 | 1.23 | 19 | .19 | 3 | .03 |
| Total diseases of nutrition | 1,028 | 7.32 | 80 | .21 | 6 | .04 | 599 | 6.08 | 34 | .34 | 4 | .04 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alcoholism | 1,257 | 8.95 | 24 | .17 | 24 | .17 | 1,490 | 15.11 | 7 | .07 | 28 | .28 |
| Brain and spinal cord | 979 | 6.97 | 88 | .63 | 41 | .29 | 557 | 5.65 | 95 | .96 | 17 | .17 |
| Insanity | 150 | 1.07 | 95 | .68 | 3 | .02 | 178 | 1.80 | 86 | .87 | ........ | ........ |
| Meningitis | 66 | .47 | 1 | .01 | 31 | .22 | 39 | .40 | 6 | .06 | 16 | .16 |
| Poisoning, narcotic | 61 | .43 | 7 | .05 | 9 | .06 | 44 | .45 | 6 | .06 | 12 | .12 |
| Nervous system, others | 3,526 | 25.12 | 48 | .34 | 7 | .05 | 2,407 | 24.40 | 73 | .74 | 2 | .02 |
| Total diseases of the nervous system | 6,039 | 43.01 | 263 | 1.88 | 115 | .81 | 4,715 | 47.81 | 273 | 2.76 | 75 | .75 |
| Poisoning, irritant | 263 | 1.87 | 1 | .01 | 11 | .08 | 208 | 2.11 | ........ | ........ | 6 | .06 |
| Tonsillitis, pharyngitis, and sore throat | 5,061 | 36.05 | 2 | .01 | 1 | .01 | 4,351 | 44.11 | ........ | ........ | 2 | .02 |
| Peritonitis | 108 | .77 | ........ | ........ | 27 | .19 | 43 | .44 | ........ | ........ | 14 | .14 |
| Dyspepsia, colic, and constipation | 12,783 | 91.04 | 27 | .19 | 4 | .03 | 7,174 | 72.74 | 10 | .10 | ........ | ........ |
| Gastritis | 2,808 | 20.00 | 9 | .06 | 5 | .04 | 2,813 | 28.52 | 10 | .10 | 6 | .06 |
| Diarrheal diseases | 56,192 | 400.24 | 65 | .46 | 202 | 1.44 | 39,040 | 395.79 | 94 | .95 | 222 | 2.25 |
| Enteritis | 3,008 | 21.43 | 5 | .04 | 26 | .19 | 972 | 9.85 | 6 | .06 | 16 | .16 |
| Perityphlitis and appendicitis | 345 | 2.46 | 12 | .09 | 31 | .22 | 248 | 2.51 | 9 | .09 | 16 | .16 |
| Digestive system, others | 6,063 | 43.19 | 52 | .37 | 27 | .19 | 3,352 | 33.98 | 46 | .47 | 25 | .25 |
| Total diseases of the digestive system | 86,631 | 617.05 | 173 | 1.23 | 334 | 2.39 | 58,201 | 590.05 | 175 | 1.77 | 307 | 3.10 |
| Heart, diseases of | 565 | 4.02 | 108 | .77 | 32 | .23 | 519 | 5.26 | 140 | 1.42 | 28 | .28 |
| Arteries and veins | 235 | 1.67 | 29 | .21 | 2 | .01 | 240 | 2.43 | 31 | .31 | 5 | .05 |
| Total diseases of the circulatory system | 800 | 5.69 | 137 | .98 | 34 | .24 | 759 | 7.69 | 171 | 1.73 | 33 | .33 |
| Bronchitis | 11,880 | 84.62 | 39 | .28 | 2 | .01 | 7,651 | 77.57 | 11 | .11 | ........ | ........ |
| Pneumonia | 961 | 6.85 | 12 | .09 | 123 | .88 | 563 | 5.71 | 9 | .09 | 91 | .92 |
| Pleurisy | 531 | 3.78 | 7 | .05 | 6 | .04 | 370 | 3.75 | 9 | .09 | 2 | .02 |
| Respiratory system, others | 5,912 | 42.11 | 24 | .17 | 6 | .04 | 3,589 | 36.39 | 24 | .24 | 9 | .09 |
| Total diseases of the respiratory organs | 19,284 | 137.36 | 82 | .59 | 137 | .97 | 12,173 | 123.42 | 53 | .53 | 102 | 1.03 |
| Kidneys, diseases of | 321 | 2.29 | 24 | .17 | 21 | .15 | 225 | 2.28 | 15 | .15 | 27 | .27 |
| Varicocele | 378 | 2.69 | 26 | .19 | ........ | ........ | 414 | 4.20 | 16 | .16 | ........ | ........ |
| Genito-urinary, others | 1,155 | 8.23 | 20 | .14 | 3 | .02 | 1,253 | 12.70 | 24 | .24 | ........ | ........ |
| Total diseases of the genito-urinary system | 1,854 | 13.21 | 70 | .50 | 24 | .17 | 1,892 | 19.18 | 55 | .55 | 27 | .27 |
| Adenitis | 441 | 3.14 | 4 | .03 | ........ | ........ | 636 | 6.45 | 2 | .02 | ........ | ........ |
| Lymphatic system, others | 116 | .83 | 3 | .02 | ........ | ........ | 90 | .91 | 4 | .04 | ........ | ........ |
| Total diseases of the lymphatic system | 557 | 3.97 | 7 | .05 | ........ | ........ | 726 | 7.36 | 6 | .06 | ........ | ........ |
| Rheumatism, muscular | 7,536 | 53.68 | 72 | .51 | ........ | ........ | 4,916 | 49.85 | 48 | .49 | ........ | ........ |
| Osteitis and periostitis | 157 | 1.12 | 6 | .04 | ........ | ........ | 184 | 1.87 | 7 | .07 | ........ | ........ |
| Arthritis and synovitis | 862 | 6.14 | 28 | .20 | ........ | ........ | 760 | 7.71 | 17 | .17 | ........ | ........ |
| Rheumatism, chronic articular | 714 | 5.09 | 73 | .52 | 1 | .01 | 849 | 8.61 | 80 | .81 | ........ | ........ |
| Muscles, bones, and joints, others | 328 | 2.34 | 35 | .25 | ........ | ........ | 323 | 3.27 | 43 | .44 | ........ | ........ |
| Total diseases of the muscles, bones, and joints | 9,597 | 68.37 | 214 | 1.52 | 1 | .01 | 7,032 | 71.31 | 195 | 1.98 | ........ | ........ |

TABE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888–1897*—Continued.

| | White troops. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1898. | | | | | | 1899. | | | | | |
| Mean strength | 140,395. | | | | | | 98,635. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total diseases of the integumentary system, all | 7,285 | 51.89 | 19 | 0.14 | 4 | 0.03 | 12,449 | 126.21 | 17 | 0.17 | 1 | 0.01 |
| Total diseases of the eye | 1,330 | 9.47 | 46 | .33 | | | 1,276 | 12.94 | 60 | .61 | | |
| Total diseases of the ear | 1,038 | 7.39 | 44 | .31 | 3 | .02 | 1,281 | 12.99 | 85 | .86 | 2 | .02 |
| Total diseases of the nose | 83 | .59 | 6 | .04 | | | 129 | 1.31 | 2 | .02 | | |
| Total unclassified | 3,120 | 22.22 | 54 | .38 | 44 | .31 | 758 | 7.68 | 1 | .01 | 1 | .01 |
| Total for diseases | 281,766 | 2,006.95 | 1,590 | 11.33 | 3,529 | 25.14 | 195,941 | 1,986.51 | 1,726 | 17.50 | 1,169 | 11.85 |
| Drowning | 1 | .01 | | | 32 | .23 | | | | | 77 | .78 |
| Exhaustion from exposure and fatigue | 1,398 | 9.96 | 9 | .06 | 11 | .08 | 1,455 | 14.75 | | | | |
| Heat stroke | 532 | 3.79 | 12 | .09 | 8 | .06 | 201 | 2.04 | 2 | .02 | | |
| Lightning | 32 | .23 | | | 5 | .04 | 7 | .07 | 1 | .01 | 1 | .01 |
| Venomous bites, stings, and wounds | 438 | 3.12 | 1 | .01 | | | 800 | 8.11 | | | | |
| Abrasions, blisters, burns, and scalds | 1,862 | 13.26 | 1 | .01 | | | 1,608 | 16.30 | | | | |
| Compression and concussion of brain | 81 | .58 | 2 | .01 | 6 | .04 | 39 | .40 | | | 5 | .05 |
| Contusions and sprains | 7,004 | 49.89 | 28 | .20 | 1 | .01 | 6,399 | 64.88 | 10 | .10 | | |
| Dislocations | 259 | 1.84 | 9 | .06 | 1 | .01 | 227 | 2.30 | 4 | .04 | | |
| Fractures (not shot) | 756 | 5.39 | 25 | .18 | 16 | .11 | 630 | 6.39 | 87 | .88 | 18 | .18 |
| Herniæ | 1,012 | 7.21 | 166 | 1.18 | 2 | .01 | 768 | 7.79 | 118 | 1.20 | 1 | .01 |
| Wounds, contused, lacerated, and punctured | 1,940 | 13.82 | 6 | .04 | 3 | .02 | 2,139 | 21.69 | 3 | .03 | 1 | .01 |
| Wounds, incised | 1,107 | 7.88 | 2 | .01 | 9 | .06 | 1,181 | 11.97 | 6 | .06 | 21 | .21 |
| Wounds, gunshot | 1,766 | 12.58 | 110 | .78 | 270 | 1.92 | 2,201 | 22.31 | 211 | 2.14 | 523 | 5.30 |
| Secondary results of injury | 164 | 1.17 | 21 | .15 | 2 | .01 | 313 | 3.17 | 34 | .34 | 1 | .01 |
| Other injuries | 1,108 | 7.89 | 13 | .09 | 42 | .30 | 669 | 6.78 | 16 | .16 | 16 | .16 |
| Total for injuries | 19,460 | 138.61 | 405 | 2.88 | 408 | 2.91 | 18,637 | 188.95 | 442 | 4.48 | 661 | 6.70 |
| Total for diseases and injuries | 301,226 | 2,145.56 | 1,995 | 14.21 | 3,937 | 28.05 | 214,578 | 2,175.47 | 2,168 | 21.98 | 1,830 | 18.55 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888-1897*—Continued.

| | Colored troops. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1898. | | | | | | 1899. | | | | | |
| Mean strength | 7,400. | | | | | | 6,911. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | N mber. | Ratio. | Number. | Ratio. |
| Scarlet fever | ........ | ........ | ........ | ........ | ........ | ........ | 1 | 0.14 | ........ | ........ | ........ | ........ |
| Measles | 129 | 17.43 | ........ | ........ | ........ | ........ | 103 | 14.90 | ........ | ........ | ........ | ........ |
| Smallpox | ........ | ........ | ........ | ........ | ........ | ........ | 14 | 2.03 | ........ | ........ | ........ | ........ |
| Vaccinia | 505 | 68.24 | ........ | ........ | ........ | ........ | 392 | 56.73 | ........ | ........ | ........ | ........ |
| Influenza | 224 | 30.27 | ........ | ........ | ........ | ........ | 359 | 51.95 | ........ | ........ | 1 | 0.14 |
| Dengue | 58 | 7.84 | ........ | ........ | ........ | ........ | 101 | 14.62 | ........ | ........ | ........ | ........ |
| Mumps | 57 | 7.70 | ........ | ........ | ........ | ........ | 188 | 27.20 | ........ | ........ | ........ | ........ |
| Diphtheria | 2 | .27 | ........ | ........ | ........ | ........ | 1 | .14 | ........ | ........ | ........ | ........ |
| Typhoid fever | 207 | 27.97 | ........ | ........ | 50 | 6.70 | 37 | 5.35 | ........ | ........ | 9 | 1.30 |
| Yellow fever | 232 | 31.35 | ........ | ........ | 36 | 4.86 | 8 | 1.16 | ........ | ........ | 1 | .14 |
| Cerebro-spinal fever | 1 | .14 | ........ | ........ | ........ | ........ | 4 | .58 | ........ | ........ | 6 | .87 |
| Malarial fever, intermittent | 4,763 | 643.65 | 1 | 0.14 | ........ | ........ | 3,160 | 457.25 | 1 | 0.14 | ........ | ........ |
| Malarial fever, remittent | 719 | 97.16 | ........ | ........ | 6 | .81 | 392 | 56.73 | ........ | ........ | 3 | .43 |
| Malarial fever, pernicious | 28 | 3.78 | ........ | ........ | 21 | 2.84 | 12 | 1.74 | ........ | ........ | 9 | 1.30 |
| Malarial cachexia | 311 | 42.03 | 1 | .14 | ........ | ........ | 286 | 41.38 | 3 | .43 | 2 | .29 |
| Fever, undetermined | 200 | 27.03 | ........ | ........ | ........ | ........ | 41 | 5.93 | ........ | ........ | ........ | ........ |
| Erysipelas | 6 | .81 | ........ | ........ | 1 | .14 | 9 | 1.30 | ........ | ........ | ........ | ........ |
| Septicæmia and tetanus | ........ | ........ | ........ | ........ | ........ | ........ | 1 | .14 | ........ | ........ | 1 | .14 |
| Rheumatic fever | 58 | 7.84 | 4 | .54 | 1 | .14 | 65 | 9.41 | 2 | .29 | ........ | ........ |
| Consumption | 34 | 4.59 | 5 | .68 | 1 | .14 | 29 | 4.20 | 9 | 1.30 | 10 | 1.45 |
| Cancer | 1 | .14 | ........ | ........ | 1 | .14 | ........ | ........ | ........ | ........ | ........ | ........ |
| Syphilis and results | 209 | 28.24 | 11 | 1.49 | ........ | ........ | 155 | 22.43 | 12 | 1.74 | ........ | ........ |
| Gonorrhea and results | 498 | 67.29 | ........ | ........ | ........ | ........ | 759 | 109.82 | 3 | .43 | ........ | ........ |
| Chancroid and results | 400 | 54.05 | 3 | .41 | ........ | ........ | 440 | 63.67 | 1 | .14 | ........ | ........ |
| Infections, others | 12 | 1.62 | ........ | ........ | 1 | .14 | 46 | 6.66 | 3 | .43 | 1 | .14 |
| Total infectious diseases | 8,654 | 1169.44 | 25 | 3.40 | 118 | 15.91 | 6,603 | 955.46 | 34 | 4.90 | 43 | 6.20 |
| Anæmia | 8 | 1.08 | ........ | ........ | ........ | ........ | 10 | 1.45 | ........ | ........ | ........ | ........ |
| Nutrition, others | 6 | .81 | ........ | ........ | 1 | .14 | 5 | .72 | 2 | .29 | 1 | .14 |
| Total diseases of nutrition | 14 | 1.89 | ........ | ........ | 1 | .14 | 15 | 2.17 | 2 | .29 | 1 | .14 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888–1897*—Continued.

| | Colored troops. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1898. | | | | | | 1899. | | | | | |
| Mean strength | 7,400. | | | | | | 6,911. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Alcoholism | 22 | 2.97 | 1 | 0.14 | | | 39 | 5.64 | | | 1 | 0.14 |
| Brain and spinal cord | 73 | 9.86 | 6 | .81 | 1 | 0.14 | 108 | 15.63 | 5 | 0.72 | 3 | .43 |
| Insanity | 9 | 1.22 | 3 | .41 | | | 10 | 1.45 | 6 | .87 | | |
| Meningitis | 1 | .14 | | | 2 | .27 | 3 | .43 | | | 1 | .14 |
| Poisoning, narcotic | 4 | .54 | | | | | 3 | .43 | | | 1 | .14 |
| Nervous system, others | 225 | 30.40 | 2 | .27 | 1 | .14 | 306 | 44.28 | 4 | .58 | 1 | .14 |
| Total diseases of the nervous system | 334 | 45.18 | 12 | 1.63 | 4 | .55 | 469 | 67.86 | 15 | 2.17 | 7 | .99 |
| Poisoning, irritant | 2 | .27 | | | 1 | .14 | 8 | 1.16 | | | | |
| Tonsillitis, pharyngitis, and sore throat | 660 | 89.19 | | | | | 770 | 111.42 | | | | |
| Peritonitis | | | | | | | 7 | 1.01 | | | | |
| Dyspepsia, colic, and constipation | 626 | 84.59 | | | | | 904 | 130.81 | 1 | .14 | | |
| Gastritis | 51 | 6.89 | | | 1 | .14 | 154 | 22.28 | | | | |
| Diarrheal diseases | 1,244 | 168.11 | | | 12 | 1.62 | 1,140 | 164.96 | 1 | .14 | 4 | .58 |
| Enteritis | 124 | 16.76 | | | 1 | .14 | 152 | 21.99 | | | 4 | .58 |
| Perityphilitis and appendicitis | 17 | 2.30 | 1 | .14 | | | 12 | 1.74 | 1 | .14 | | |
| Digestive system, others | 373 | 50.40 | 3 | .41 | 3 | .41 | 311 | 45.00 | 2 | .29 | | |
| Total diseases of the digestive system | 3,097 | 418.51 | 4 | .55 | 18 | 2.45 | 3,458 | 500.37 | 5 | .71 | 8 | 1.16 |
| Heart, diseases of | 47 | 6.35 | 5 | .68 | 2 | .27 | 41 | 5.93 | 5 | .72 | 3 | .43 |
| Arteries and veins | 6 | .81 | | | | | 9 | 1.30 | 3 | .43 | | |
| Total diseases of the circulatory system | 53 | 7.16 | 5 | .68 | 2 | .27 | 50 | 7.23 | 8 | 1.15 | 3 | .43 |
| Bronchitis | 749 | 101.22 | | | | | 724 | 104.76 | 1 | .14 | | |
| Pneumonia | 59 | 7.97 | | | 13 | 1.76 | 66 | 9.55 | | | 8 | 1.16 |
| Pleurisy | 27 | 3.65 | | | | | 44 | 6.37 | | | | |
| Respiratory system, others | 178 | 24.05 | 1 | .14 | 2 | .27 | 221 | 31.98 | 1 | .14 | 1 | .14 |
| Total diseases of the respiratory organs | 1,013 | 136.89 | 1 | .14 | 15 | 2.03 | 1,055 | 152.66 | 2 | .28 | 9 | 1.30 |
| Kidneys, disease of | 18 | 2.43 | 1 | .14 | 2 | .27 | 18 | 2.60 | 4 | .58 | 1 | .14 |
| Varicocele | 8 | 1.08 | | | | | 9 | 1.30 | 1 | .14 | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Genito-urinary, others** | 118 | 15.94 | 4 | .54 | | | 168 | 24.31 | 8 | .43 | | |
| Total diseases of the genito-urinary system | 144 | 19.45 | 5 | .68 | 2 | .27 | 195 | 28.21 | 8 | 1.15 | 1 | .14 |
| Adenitis | 32 | 4.32 | 1 | .14 | | | 52 | 7.52 | | | | |
| Lymphatic system, others | 14 | 1.89 | | | | | 8 | 1.16 | | | | |
| Total diseases of the lymphatic system | 46 | 6.21 | 1 | .14 | | | 60 | 8.68 | | | | |
| Rheumatism, muscular | 753 | 101.76 | 3 | .41 | | | 702 | 101.59 | 8 | 1.16 | | |
| Osteitis and periostitis | 9 | 1.22 | 1 | .14 | | | 16 | 2.32 | 1 | .14 | | |
| Arthritis and synovitis | 61 | 8.24 | 1 | .14 | | | 123 | 17.80 | 2 | .29 | | |
| Rheumatism, chronic articular | 113 | 15.27 | 8 | 1.08 | | | 100 | 14.47 | 15 | 2.17 | | |
| Muscles, bones, and joints, others | 11 | 1.49 | 1 | .14 | | | 15 | 2.17 | 3 | .43 | | |
| Total diseases of the muscles, bones, and joints | 947 | 127.98 | 14 | 1.91 | | | 956 | 138.35 | 29 | 4.19 | | |
| Total diseases of the integumentary system, all | 231 | 31.21 | 1 | .14 | 1 | .14 | 533 | 77.13 | 2 | .29 | | |
| Total diseases of the eye | 81 | 10.95 | 1 | .14 | | | 151 | 21.85 | 9 | 1.30 | | |
| Total diseases of the ear | 26 | 3.51 | 3 | .41 | | | 47 | 6.80 | 7 | 1.01 | | |
| Total diseases of the nose | 5 | .68 | | | | | 14 | 2.03 | 1 | .14 | | |
| Total unclassified | 37 | 5.00 | | | | | 23 | 3.33 | | | | |
| Total for diseases | 14,682 | 1,984.05 | 72 | 9.73 | 161 | 21.76 | 13,629 | 1,972.08 | 122 | 17.65 | 72 | 10.42 |
| Drowning | | | | | 3 | .41 | | | | | 22 | 3.18 |
| Exhaustion from exposure and fatigue | 12 | 1.62 | | | | | 21 | 3.04 | | | 1 | .14 |
| Heat stroke | 12 | 1.62 | | | 1 | .14 | 3 | .43 | | | | |
| Lightning | | | | | | | | | | | 1 | .14 |
| Venomous bites, stings, and wounds | 11 | 1.49 | | | | | 34 | 4.92 | | | | |
| Abrasions, blisters, burns, and scalds | 58 | 7.84 | | | | | 99 | 14.33 | | | | |
| Compression and concussion of brain | 6 | .81 | | | | | 1 | .14 | 1 | .14 | | |
| Contusions and sprains | 408 | 55.13 | 5 | .68 | | | 759 | 109.82 | 1 | .14 | | |
| Dislocations | 12 | 1.62 | 1 | .14 | | | 16 | 2.32 | | | | |
| Fractures (not shot) | 34 | 4.59 | 3 | .41 | 1 | .14 | 41 | 5.93 | 1 | .14 | 1 | .14 |
| Herniæ | 38 | 5.13 | 5 | .68 | | | 37 | 5.35 | 7 | 1.01 | | |
| Wounds, contused, lacerated, and punctured | 154 | 20.81 | 1 | .14 | | | 255 | 36.90 | | | 1 | .14 |
| Wounds, incised | 84 | 11.35 | | | 1 | .14 | 134 | 19.39 | | | | |
| Wounds, gunshot | 191 | 25.81 | 4 | .54 | 32 | 4.32 | 75 | 10.85 | 15 | 2.17 | 15 | 2.17 |
| Secondary results of injury | 19 | 2.57 | | | | | 53 | 7.67 | 3 | .43 | | |
| Other injuries | 148 | 20.00 | 2 | .27 | | | 150 | 21.71 | 2 | .29 | 2 | .29 |
| Total for injuries | 1,287 | 173.92 | 21 | 2.84 | 38 | 5.13 | 1,678 | 242.80 | 30 | 4.34 | 43 | 6.22 |
| Total for diseases and injuries | 15,969 | 2,157.97 | 93 | 12.57 | 199 | 26.89 | 15,307 | 2,214.88 | 152 | 21.99 | 115 | 16.64 |

TABLE VIII.—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888–1897*—Continued.

| | Total Army. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1898. | | | | | | 1899. | | | | | |
| Mean strength | 147,795. | | | | | | 105,546. | | | | | |
| Causes of admission to sick report. | Admissions. Number. | Admissions. Ratio. | Discharges. Number. | Discharges. Ratio. | Deaths. Number. | Deaths. Ratio. | Admissions. Number. | Admissions. Ratio. | Discharges. Number. | Discharges. Ratio. | Deaths. Number. | Deaths. Ratio. |
| Scarlet fever | 47 | 0.32 | ........ | ........ | 7 | 0.05 | 22 | 0.21 | ........ | ........ | ........ | ........ |
| Measles | 7,387 | 49.98 | 7 | 0.05 | 70 | .47 | 2,755 | 26.10 | 3 | 0.03 | 37 | 0.35 |
| Smallpox | 92 | .62 | ........ | ........ | 23 | .16 | 347 | 3.29 | ........ | ........ | 84 | .80 |
| Vaccinia | 6,916 | 46.80 | 1 | .01 | ........ | ........ | 6,895 | 65.33 | 1 | .01 | 1 | .01 |
| Influenza | 4,242 | 28.70 | 2 | .01 | ........ | ........ | 5,630 | 53.34 | ........ | ........ | 5 | .05 |
| Dengue | 249 | 1.68 | ........ | ........ | 2 | .01 | 1,602 | 15.18 | ........ | ........ | ........ | ........ |
| Mumps | 2,075 | 14.04 | 2 | .01 | ........ | ........ | 1,839 | 17.42 | ........ | ........ | ........ | ........ |
| Diphtheria | 59 | .40 | ........ | ........ | 4 | .03 | 58 | .55 | ........ | ........ | 5 | .05 |
| Typhoid fever | 20,926 | 141.59 | 44 | .30 | 2,192 | 14.83 | 2,181 | 20.69 | 24 | .23 | 258 | 2.44 |
| Yellow fever | 1,169 | 7.91 | ........ | ........ | 144 | .97 | 262 | 2.48 | ........ | ........ | 55 | .52 |
| Cerebro-spinal fever | 140 | .95 | 9 | .06 | 79 | .53 | 64 | .61 | 3 | .03 | 41 | .39 |
| Malarial fever, intermittent | 61,137 | 413.67 | 1 | .01 | 9 | .06 | 41,284 | 391.15 | 4 | .04 | ........ | ........ |
| Malarial fever, remittent | 25,565 | 172.98 | 25 | .17 | 135 | .91 | 17,202 | 162.98 | 7 | .07 | 16 | .15 |
| Malarial fever, pernicious | 492 | 3.33 | 5 | .03 | 185 | 1.25 | 150 | 1.42 | ........ | ........ | 58 | .55 |
| Malarial cachexia | 3,222 | 21.80 | 32 | .22 | 20 | .14 | 1,991 | 18.86 | 105 | .99 | 20 | .19 |
| Fever, undetermined | 4,152 | 28.09 | ........ | ........ | 1 | .01 | 2,689 | 25.48 | ........ | ........ | ........ | ........ |
| Erysipelas | 94 | .64 | ........ | ........ | 1 | .01 | 92 | .87 | ........ | ........ | 4 | .04 |
| Septicæmia and tetanus | 22 | .15 | ........ | ........ | 16 | .11 | 25 | .24 | 1 | .01 | 8 | .08 |
| Rheumatic fever | 673 | 4.55 | 14 | .09 | 1 | .01 | 698 | 6.61 | 9 | .09 | 3 | .03 |
| Consumption | 547 | 3.70 | 165 | 1.12 | 38 | .26 | 420 | 3.98 | 190 | 1.80 | 57 | .54 |
| Cancer | 21 | .14 | 2 | .01 | 6 | .04 | 23 | .22 | 4 | .04 | 3 | .03 |
| Syphilis and results | 1,527 | 10.33 | 97 | .66 | 4 | .03 | 1,476 | 13.98 | 205 | 1.94 | ........ | ........ |
| Gonorrhœa and results | 7,683 | 51.99 | 47 | .32 | 1 | .01 | 8,468 | 80.23 | 58 | .55 | 1 | .01 |
| Chancroid and results | 2,914 | 19.72 | 10 | .07 | ........ | ........ | 4,094 | 38.79 | 13 | .12 | ........ | ........ |
| Infections, others | 423 | 2.86 | 7 | .05 | 7 | .05 | 284 | 2.69 | 6 | .06 | 4 | .04 |
| Total infectious diseases | 151,774 | 1,026.94 | 470 | 3.19 | 2,945 | 19.94 | 100,554 | 952.70 | 633 | 6.01 | 660 | 6.27 |
| Anæmia | 500 | 3.38 | 6 | .04 | 4 | .03 | 488 | 4.62 | 15 | .14 | 1 | .01 |
| Nutrition, others | 542 | 3.67 | 24 | .16 | 3 | .02 | 126 | 1.19 | 21 | .20 | 4 | .04 |
| Total diseases of nutrition | 1,042 | 7.05 | 30 | .20 | 7 | .05 | 614 | 5.81 | 36 | .34 | 5 | .05 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alcoholism | 1,279 | 8.65 | 25 | .17 | 24 | .16 | 1,529 | 14.49 | 7 | .07 | 29 | .27 |
| Brain and spinal cord | 1,052 | 7.12 | 94 | .64 | 42 | .28 | 665 | 6.30 | 100 | .95 | 20 | .19 |
| Insanity | 159 | 1.08 | 98 | .66 | 3 | .02 | 188 | 1.78 | 92 | .87 | ...... | ...... |
| Meningitis | 67 | .45 | 1 | .01 | 33 | .22 | 42 | .40 | 6 | .06 | 17 | .16 |
| Poisoning, narcotic | 65 | .44 | 7 | .05 | 9 | .06 | 47 | .45 | 6 | .06 | 13 | .12 |
| Nervous system, others | 3,751 | 25.38 | 50 | .34 | 8 | .05 | 2,713 | 25.70 | 77 | .73 | 3 | .03 |
| Total diseases of the nervous system | 6,373 | 43.12 | 275 | 1.86 | 119 | .79 | 5,184 | 49.12 | 288 | 2.74 | 82 | .77 |
| Poisoning, irritant | 265 | 1.79 | 1 | .01 | 12 | .08 | 216 | 2.05 | ...... | ...... | 6 | .06 |
| Tonsillitis, pharyngitis, and sore throat | 5,721 | 38.71 | 2 | .01 | 1 | .01 | 5,121 | 48.52 | ...... | ...... | 2 | .02 |
| Peritonitis | 108 | .73 | ...... | ...... | 27 | .18 | 50 | .47 | ...... | ...... | 14 | .13 |
| Dyspepsia, colic, and constipation | 13,409 | 90.73 | 27 | .18 | 4 | .03 | 8,078 | 76.54 | 11 | .10 | ...... | ...... |
| Gastritis | 2,859 | 19.35 | 9 | .06 | 6 | .04 | 2,967 | 28.11 | 10 | .09 | 6 | .06 |
| Diarrheal diseases | 57,436 | 388.62 | 65 | .44 | 214 | 1.45 | 40,180 | 380.69 | 95 | .90 | 226 | 2.14 |
| Enteritis | 3,132 | 21.19 | 5 | .03 | 27 | .18 | 1,124 | 10.65 | 6 | .06 | 20 | .19 |
| Perityphlitis and appendicitis | 362 | 2.45 | 13 | .09 | 31 | .21 | 260 | 2.46 | 10 | .09 | 16 | .15 |
| Digestive system, others | 6,436 | 43.55 | 55 | .37 | 30 | .20 | 3,663 | 34.71 | 48 | .45 | 25 | .24 |
| Total diseases of the digestive system | 89,728 | 607.12 | 177 | 1.19 | 352 | 2.38 | 61,659 | 584.20 | 180 | 1.69 | 315 | 2.99 |
| Heart, disease of | 612 | 4.14 | 113 | .76 | 34 | .23 | 560 | 5.31 | 145 | 1.37 | 31 | .29 |
| Arteries and veins | 241 | 1.63 | 29 | .20 | 2 | .01 | 249 | 2.36 | 34 | .32 | 5 | .05 |
| Total diseases of the circulatory system | 853 | 5.77 | 142 | .96 | 36 | .24 | 809 | 7.67 | 179 | 1.69 | 36 | .34 |
| Bronchitis | 12,629 | 85.46 | 39 | .26 | 2 | .01 | 8,375 | 79.35 | 12 | .11 | ...... | ...... |
| Pneumonia | 1,020 | 6.90 | 12 | .08 | 136 | .92 | 629 | 5.96 | 9 | .09 | 99 | .94 |
| Pleurisy | 558 | 3.78 | 7 | .05 | 6 | .04 | 414 | 3.92 | 9 | .09 | 2 | .02 |
| Respiratory system, others | 6,090 | 41.21 | 25 | .17 | 8 | .05 | 3,810 | 36.10 | 25 | .24 | 10 | .09 |
| Total diseases of the respiratory organs | 20,297 | 137.35 | 83 | .56 | 152 | 1.02 | 13,228 | 125.33 | 55 | .53 | 111 | 1.05 |
| Kidneys, diseases of | 339 | 2.29 | 25 | .17 | 23 | .16 | 243 | 2.30 | 19 | .18 | 28 | .27 |
| Varicocele | 386 | 2.61 | 26 | .18 | ...... | ...... | 423 | 4.01 | 17 | .16 | ...... | ...... |
| Genito-urinary, others | 1,273 | 8.61 | 24 | .16 | 3 | .02 | 1,421 | 13.46 | 27 | .26 | ...... | ...... |
| Total diseases of the genito-urinary system | 1,998 | 13.51 | 75 | .51 | 26 | .18 | 2,087 | 19.77 | 63 | .60 | 28 | .27 |
| Adenitis | 473 | 3.20 | 5 | .03 | ...... | ...... | 688 | 6.52 | 2 | .02 | ...... | ...... |
| Lymphatic system, others | 130 | .88 | 3 | .02 | ...... | ...... | 98 | .93 | 4 | .04 | ...... | ...... |
| Total diseases of the lymphatic system | 603 | 4.08 | 8 | .05 | ...... | ...... | 786 | 7.45 | 6 | .06 | ...... | ...... |
| Rheumatism, muscular | 8,289 | 56.09 | 75 | .51 | ...... | ...... | 5,618 | 53.23 | 56 | .53 | ...... | ...... |
| Osteitis and periostitis | 166 | 1.12 | 7 | .05 | ...... | ...... | 200 | 1.89 | 8 | .08 | ...... | ...... |
| Arthritis and synovitis | 923 | 6.25 | 29 | .20 | ...... | ...... | 883 | 8.37 | 19 | .18 | ...... | ...... |
| Rheumatism, chronic articular | 827 | 5.60 | 81 | .55 | 1 | .01 | 949 | 8.99 | 95 | .90 | ...... | ...... |
| Muscles, bones, and joints, others | 339 | 2.29 | 36 | .24 | ...... | ...... | 338 | 3.20 | 46 | .44 | ...... | ...... |
| Total diseases of the muscles, bones, and joints | 10,544 | 71.35 | 228 | 1.55 | 1 | .01 | 7,988 | 75.68 | 224 | 2.13 | ...... | ...... |

**TABLE VIII.**—*Armies, regular and volunteer, 1898 and 1899—Admissions to sick report, discharges, and deaths from various causes, with their ratios per thousand of mean strength, as compared with the corresponding ratios of the Regular Army for the decade 1888-1897*—Continued.

| | Total Army. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1898. | | | | | | 1899. | | | | | |
| Mean strength | 147,795. | | | | | | 105,546. | | | | | |
| Causes of admission to sick report. | Admissions. | | Discharges. | | Deaths. | | Admissions. | | Discharges. | | Deaths. | |
| | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. | Number. | Ratio. |
| Total diseases of the integumentory system, all | 7,516 | 50.86 | 20 | 0.14 | 5 | 0.03 | 12,982 | 123.00 | 19 | 0.18 | 1 | 0.01 |
| Total diseases of the eye | 1,411 | 9.55 | 47 | .32 | | | 1,427 | 13.52 | 69 | .65 | | |
| Total diseases of the ear | 1,064 | 7.20 | 47 | .32 | 3 | .02 | 1,328 | 12.58 | 92 | .87 | 2 | .02 |
| Total diseases of the nose | 88 | .60 | 6 | .04 | | | 143 | 1.35 | 3 | .03 | | |
| Total unclassified | 3,157 | 21.36 | 54 | .37 | 44 | .30 | 781 | 7.40 | 1 | .01 | 1 | .01 |
| Total for diseases | 296,448 | 2,005.80 | 1,662 | 11.25 | 36.90 | 24.97 | 209,570 | 1,985.58 | 1,848 | 17.51 | 12.41 | 11.76 |
| Drowning | 1 | .01 | | | 35 | .24 | | | | | 99 | .94 |
| Exhaustion from exposure and fatigue | 1,410 | 9.54 | 9 | .06 | 11 | .07 | 1,476 | 13.98 | | | 3 | .03 |
| Heat stroke | 544 | 3.68 | 12 | .08 | 9 | .06 | 204 | 1.93 | 2 | .02 | | |
| Lightning | 32 | .22 | | | 5 | .03 | 7 | .07 | 1 | .01 | 2 | .02 |
| Venomous bites, stings, and wounds | 449 | 3.04 | 1 | .01 | | | 834 | 7.90 | | | | |
| Abrasions, blisters, burns, and scalds | 1,920 | 12.99 | 1 | .01 | | | 1,707 | 16.17 | | | | |
| Compression and concussion of brain | 87 | .59 | 2 | .01 | 6 | .04 | 40 | .38 | 1 | .01 | 5 | .05 |
| Contusions and sprains | 7,412 | 50.15 | 33 | .22 | 1 | .01 | 7,158 | 67.82 | 11 | .10 | | |
| Dislocations | 271 | 1.83 | 10 | .07 | 1 | .01 | 243 | 2.30 | 4 | .04 | | |
| Fractures (not shot) | 790 | 5.35 | 28 | .19 | 17 | .12 | 671 | 6.36 | 38 | .36 | 14 | .13 |
| Herniæ | 1,050 | 7.10 | 171 | 1.16 | 2 | .01 | 805 | 7.63 | 125 | 1.18 | 1 | .01 |
| Wounds, contused, lacerated, and punctured | 2,094 | 14.17 | 7 | .05 | 3 | .02 | 2,394 | 22.68 | 3 | .03 | 2 | .02 |
| Wounds, incised | 1,191 | 8.06 | 2 | .01 | 10 | .07 | 1,315 | 12.46 | 6 | .06 | 21 | .20 |
| Wounds, gunshot | 2,057 | 13.92 | 114 | .77 | 302 | 2.04 | 2,276 | 21.56 | 226 | 2.14 | 538 | 5.10 |
| Secondary results of injury | 183 | 1.24 | 21 | .14 | 2 | .01 | 366 | 3.47 | 37 | .35 | 1 | .01 |
| Other injuries | 1,256 | 8.50 | 15 | .10 | 42 | .28 | 819 | 7.76 | 18 | .17 | 18 | .17 |
| Total for injuries | 20,747 | 140.38 | 426 | 2.88 | 446 | 3.02 | 20,315 | 192.48 | 472 | 4.47 | 704 | 6.67 |
| Total for diseases and injuries | 317,195 | 2,146.18 | 2,088 | 14.13 | 4,136 | 27.99 | 229,885 | 2,178.06 | 2,320 | 21.98 | 1,945 | 18.43 |

TABLE IX.—*Number of white and colored applicants for enlistment examined physically during the year 1899, with the number accepted, rejected on primary examination, and declined, with ratios per thousand.*

| | White. | | Colored. | | Total. | |
|---|---|---|---|---|---|---|
| | Number. | Ratio per 1,000 examined. | Number. | Ratio per 1,000 examined. | Number. | Ratio per 1,000 examined. |
| Examined | 64,303 | 1,000.00 | 6,008 | 1,000.00 | 70,311 | 1,000.00 |
| Accepted | 43,556 | 677.36 | 4,343 | 722.87 | 47,899 | 681.24 |
| Rejected | 17,596 | 273.64 | 1,503 | 250.17 | 19,099 | 271.64 |
| Declined | 3,151 | 49.00 | 162 | 26.96 | 3,313 | 47.12 |

In addition to the foregoing, 35 Indians were examined, of whom 19 were enlisted as scouts and 10 for regular service; 6 rejected.

TABLE X.—*Nativity of white and colored recruits accepted during the year 1899, with ratios per thousand accepted.*

| Nativity. | White. | | Colored. | | Total. | |
|---|---|---|---|---|---|---|
| | Number. | Ratio per 1,000 accepted. | Number. | Ratio per 1,000 accepted. | Number. | Ratio per 1,000 accepted. |
| United States | 36,671 | 765.59 | 4,312 | 90.02 | 40,983 | 855.61 |
| England | 821 | 17.14 | | | 821 | 17.14 |
| Scotland | 199 | 4.16 | | | 199 | 4.16 |
| Wales | 46 | .96 | | | 46 | .96 |
| Ireland | 1,637 | 34.18 | | | 1,637 | 34.18 |
| Canada | 546 | 11.40 | 7 | 0.15 | 553 | 11.55 |
| Other British | 104 | 2.17 | 13 | .27 | 117 | 2.44 |
| France | 44 | .92 | | | 44 | .92 |
| Belgium | 17 | .35 | | | 17 | .35 |
| Holland | 39 | .81 | | | 39 | .81 |
| Denmark | 192 | 4.01 | | | 192 | 4.01 |
| Norway | 129 | 2.69 | | | 129 | 2.69 |
| Sweden | 315 | 6.58 | | | 315 | 6.58 |
| Germany | 1,993 | 41.61 | | | 1,993 | 41.61 |
| Switzerland | 140 | 2.92 | | | 140 | 2.92 |
| Austria | 207 | 4.32 | | | 207 | 4.32 |
| Bohemia | 41 | .86 | 1 | .02 | 42 | .88 |
| Hungary | 32 | .67 | | | 32 | .67 |
| Poland | 26 | .54 | | | 26 | .54 |
| Russia | 224 | 4.68 | | | 224 | 4.68 |
| Finland | 15 | .31 | | | 15 | .30 |
| Italy | 56 | 1.17 | | | 56 | 1.17 |
| Others | 62 | 1.29 | 10 | .21 | 72 | 1.50 |
| Total foreign | 6,885 | 143.74 | 31 | .65 | 6,916 | 144.39 |
| Grand total | 43,556 | 909.33 | 4,343 | 90.67 | 47,899 | 1,000.00 |

TABLE XI.—*Causes of rejection among 70,311 candidates for enlistment examined during the year 1899, with ratios per thousand examined.*

| Number examined | White..... 64,303 | | Colored .... 6,008 | | Total....... 70,311 | |
|---|---|---|---|---|---|---|
| Causes of rejection. | Number rejected. | Ratio per 1,000. | Number rejected. | Ratio per 1,000. | Number rejected. | Ratio per 1,000. |
| Venereal diseases | 973 | 15.13 | 222 | 36.95 | 1,195 | 17.00 |
| Other infectious diseases | 133 | 2.07 | 15 | 2.50 | 148 | 2.11 |
| Diseases of nutrition, general | 46 | .72 | 2 | .33 | 48 | .68 |
| Diseases of the nervous system | 34 | .53 | 1 | .17 | 35 | .50 |
| Diseases of the digestive system | 1,766 | 27.46 | 99 | 16.48 | 1,865 | 26.53 |
| Diseases of the circulatory system | 2,471 | 38.42 | 205 | 34.12 | 2,676 | 38.06 |
| Diseases of the respiratory organs | 102 | 1.59 | 7 | 1.17 | 109 | 1.55 |
| Diseases of the genito-urinary system | 1,487 | 23.12 | 90 | 14.98 | 1,577 | 22.43 |
| Diseases of the lymphatic system and ductless glands | 47 | .73 | 7 | 1.17 | 54 | .77 |
| Diseases of the muscles, bones, and joints | 162 | 2.52 | 19 | 3.16 | 181 | 2.57 |
| Diseases of the integument and subcutaneous connective tissue | 256 | 3.98 | 21 | 3.50 | 277 | 3.94 |
| Diseases of the eye | 2,742 | 42.64 | 171 | 28.46 | 2,913 | 41.43 |
| Diseases of the ear | 186 | 2.89 | 6 | 1.00 | 192 | 2.73 |
| Diseases of the nose | 62 | .96 | 6 | 1.00 | 68 | .97 |
| Hernia | 639 | 9.94 | 37 | 6.16 | 676 | 9.61 |
| Other injuries | 141 | 2.19 | 8 | 1.33 | 149 | 2.12 |
| Overheight | 3 | .05 | ........ | ........ | 3 | .04 |
| Underheight | 409 | 6.36 | 18 | 3.00 | 427 | 6.07 |
| Overweight and obesity | 42 | .65 | 6 | 1.00 | 48 | .68 |
| Underweight | 1,479 | 23.00 | 162 | 26.96 | 1,641 | 23.34 |
| Imperfect physique | 2,815 | 43.78 | 309 | 51.43 | 3,124 | 44.43 |
| Mental insufficiency | 30 | .47 | 4 | .67 | 34 | .48 |
| Over age | 13 | .20 | 2 | .33 | 15 | .21 |
| Minor | 257 | 4.00 | 6 | 1.00 | 263 | 3.74 |
| Married or having dependent relatives | 100 | 1.56 | 7 | 1.17 | 107 | 1.52 |
| Illiteracy | 42 | .65 | 7 | 1.17 | 49 | .70 |
| Imperfect knowledge of English | 10 | .16 | ........ | ........ | 10 | .14 |
| Reenlistment disapproved for various reasons | 11 | .17 | 1 | .17 | 12 | .17 |
| Character, bad or doubtful | 213 | 3.31 | 6 | 1.00 | 219 | 3.12 |
| Reference, none or unsatisfactory | 34 | .53 | 3 | .50 | 37 | .53 |
| Aliens | 8 | .12 | ........ | ........ | 8 | .11 |
| General unfitness and undesirable | 655 | 10.19 | 36 | 5.99 | 690 | 9.81 |
| No vacancies | 3 | .05 | 3 | .50 | 6 | .09 |
| Unclassified | 225 | 3.50 | 17 | 2.83 | 242 | 3.44 |
| Total | 17,596 | 273.64 | 1,503 | 250.17 | 19,099 | 271.64 |

INTERNATIONAL TABLE I.—*Examination of recruits during the year 1899.*

| No. | | White. | Colored. | Total. |
|---|---|---|---|---|
| 1 | Total number recruits examined | 64,303 | 6,008 | 70,311 |
| | Of each 1,000 of these— | | | |
| 2 | Were accepted for service | 677.36 | 722.87 | 681.24 |
| 3 | Were rejected for underheight | 6.36 | 3.00 | 6.07 |
| 4 | Were rejected for disabilities | 267.28 | 247.17 | 265.57 |
| | Of each 1,000 accepted recruits the heights were as follows (in inches): | | | |
| 5 | Under 61 | .34 | .23 | .33 |
| 6 | 61 to 62 | .48 | .69 | .50 |
| 7 | 62 to 63 | .99 | 1.84 | 1.07 |
| 8 | 63 to 64 | 9.62 | 10.36 | 9.69 |
| 9 | 64 to 65 | 107.54 | 110.52 | 107.66 |
| 10 | 65 to 66 | 137.39 | 147.82 | 138.33 |
| 11 | 66 to 67 | 175.54 | 178.45 | 175.81 |
| 12 | 67 to 68 | 178.97 | 181.44 | 179.19 |
| 13 | 68 to 69 | 154.70 | 150.36 | 154.30 |
| 14 | 69 to 70 | 109.67 | 102.69 | 109.04 |
| 15 | 70 to 71 | 67.34 | 61.94 | 66.85 |
| 16 | 71 to 72 | 34.30 | 33.39 | 34.22 |
| 17 | 72 to 73 | 14.95 | 12.44 | 14.72 |
| 18 | 73 to 74 | 5.90 | 5.99 | 5.91 |
| 19 | 74 upward | 2.43 | 1.84 | 2.38 |
| | Causes of rejection (exclusive of underheight), expressed in ratios per 1,000 of examined recruits: | | | |
| 20 | Physical debility | .72 | .33 | .68 |
| 21 | Tuberculosis of lungs or other organs | 1.59 | 1.17 | 1.55 |
| 22 | Imperfect vision | 42.35 | 28.30 | 41.15 |
| 23 | Heart disease | 23.75 | 29.13 | 24.21 |
| 24 | Goiter | .12 | .17 | .13 |
| 25 | Varicose veins, varicocele, hemorrhoids | 43.96 | 19.47 | 41.87 |
| 26 | Hernia | 9.94 | 6.16 | 9.61 |
| 27 | Flat feet | 1.82 | 3.99 | 2.01 |

INTERNATIONAL TABLE III.—*Movements of sick, by branches of military service and by months.*

VOLUNTEERS AND REGULARS, 1899.

| | Absolute numbers. | | | | | Proportions per 1,000. | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Sick disposed of. | | | In 1,000 of mean strength there were— | | In 1,000 sick disposed of there were—[1] | |
| | Mean strength. | Sick admissions. | Total.[1] | As fit for duty (recovered). | By death. | Total sick admissions. | Deaths. | Fit for duty (recovered). | Deaths. |
| **ARM OF SERVICE.** | | | | | | | | | |
| Infantry | 71,750 | 160,629 | | | 1,520 | 2,238.73 | 21.19 | | |
| Cavalry | 11,870 | 33,213 | | | 170 | 2,798.06 | 14.32 | | |
| Artillery | 11,238 | 23,514 | | | 129 | 2,092.37 | 11.48 | | |
| Ordnance | 740 | 760 | | | 9 | 1,027.03 | 12.16 | | |
| Engineers | 1,363 | 2,805 | | | 12 | 2,057.97 | 8.80 | | |
| Signal Corps | 719 | 884 | | | 9 | 1,229.48 | 12.52 | | |
| Medical Department | 4,300 | 4,911 | | | 53 | 1,142.10 | 12.33 | | |
| All others | 3,566 | 3,169 | | | 43 | 886.67 | 12.06 | | |
| **MONTH.** | | | | | | | | | |
| January | 158,596 | 30,175 | | | 164 | 190.27 | | | 1.03 |
| February | 137,339 | 23,094 | | | 247 | 168.15 | | | 1.80 |
| March | 123,266 | 22,867 | | | 241 | 185.51 | | | 1.95 |
| April | 104,028 | 16,473 | | | 182 | 158.35 | | | 1.75 |
| May | 85,934 | 16,254 | | | 132 | 189.14 | | | 1.54 |
| June | 80,227 | 15,872 | | | 136 | 197.84 | | | 1.70 |
| July | 88,504 | 16,719 | | | 140 | 188.90 | | | 1.58 |
| August | 91,920 | 18,161 | | | 137 | 197.58 | | | 1.49 |
| September | 99,079 | 16,305 | | | 118 | 164.56 | | | 1.19 |
| October | 101,711 | 18,633 | | | 141 | 183.19 | | | 1.39 |
| November | 97,794 | 17,958 | | | 143 | 183.64 | | | 1.46 |
| December | 98,156 | 17,374 | | | 164 | 177.01 | | | 1.67 |

VOLUNTEERS, 1898.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **ARM OF SERVICE.** | | | | | | | | | |
| Infantry | 93,744 | 199,010 | | | 2,675 | 2,122.91 | 28.54 | | |
| Cavalry | 2,750 | 8,218 | | | 109 | 2,988.36 | 39.64 | | |
| Artillery | 2,573 | 5,048 | | | 28 | 1,961.91 | 10.88 | | |
| Ordnance | | | | | | | | | |
| Engineers | 1,504 | 3,850 | | | 28 | 2,559.84 | 18.62 | | |
| Signal Corps | 589 | 946 | | | 11 | 1,606.11 | 18.68 | | |
| Medical Department | | | | | | | | | |
| All others | | | | | | | | | |
| **MONTH.** | | | | | | | | | |
| January | | | | | | | | | |
| February | | | | | | | | | |
| March | | | | | | | | | |
| April | | | | | | | | | |
| May | 61,775 | 6,650 | | | 39 | 107.65 | .63 | | |
| June | 150,813 | 24,813 | | | 96 | 164.58 | .64 | | |
| July | 192,997 | 37,874 | | | 310 | 198.65 | 1.61 | | |
| August | 213,220 | 52,476 | | | 829 | 246.11 | 3.89 | | |
| September | 204,965 | 39,150 | | | 853 | 191.01 | 4.16 | | |
| October | 169,447 | 22,904 | | | 423 | 185.17 | 2.50 | | |
| November | 121,405 | 17,168 | | | 199 | 141.41 | 1.64 | | |
| December | 99,302 | 16,537 | | | 102 | 166.52 | 1.03 | | |

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[1] Information not tabulated.

## INTERNATIONAL TABLE VI.—*Admissions of important diseases, by branches of military service.*

### VOLUNTEERS AND REGULARS, 1899.

| No. | Diseases of the international nosological table. | Absolute number of admissions. | | | | | | | | Admissions per 1,000 of mean strength. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Infantry. | Cavalry. | Artillery. | Ordnance. | Engineers. | Signal Corps. | Medical Department. | All others. | Infantry. | Cavalry. | Artillery. | Ordnance. | Engineers. | Signal Corps. | Medical Department. | All others. |
| 1 | Alcoholismus acutus, including delirium tremens | 931 | 150 | 292 | 10 | 32 | 16 | 58 | 40 | 12.98 | 12.64 | 25.98 | 13.51 | 23.48 | 22.25 | 13.49 | 11.22 |
| 2 | Bronchitis, all[1] | 5,438 | 1,216 | 1,132 | 58 | 201 | 6 | 158 | 166 | 75.79 | 102.44 | 100.72 | 78.37 | 147.47 | 8.34 | 36.75 | 46.55 |
| 3 | Cholera asiatica | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 4 | Cholera nostras[2] | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 5 | Diphtheria et croup | 38 | 4 | 6 | ...... | ...... | ...... | 6 | 4 | .53 | .34 | .53 | ...... | ...... | ...... | 1.40 | 1.12 |
| 6 | Dysenteria[2] | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 7 | Erysipelas | 57 | 13 | 12 | 1 | 1 | ...... | 5 | 3 | .79 | 1.10 | 1.07 | 1.35 | .73 | ...... | 1.16 | .84 |
| 8 | Febris intermittens (malaria) | 29,293 | 7,320 | 2,967 | 77 | 485 | 110 | 683 | 349 | 408.26 | 616.68 | 264.02 | 104.05 | 355.86 | 152.99 | 158.84 | 97.87 |
| 9 | Febris recurrens | 13,514 | 1,831 | 1,113 | 8 | 113 | 95 | 488 | 40 | 188.34 | 154.26 | 99.04 | 10.81 | 82.91 | 132.13 | 113.49 | 11.22 |
| 10 | Gonorrhea | 5,080 | 1,415 | 1,400 | 15 | 79 | 33 | 251 | 195 | 70.80 | 119.21 | 124.58 | 20.27 | 57.97 | 45.90 | 58.37 | 54.68 |
| 11 | Hernia | 584 | 63 | 96 | 4 | 9 | 1 | 28 | 20 | 8.14 | 5.31 | 8.54 | 5.41 | 6.60 | 1.39 | 6.51 | 5.61 |
| 12 | Influenza | 4,129 | 496 | 553 | 71 | 114 | 1 | 192 | 74 | 57.55 | 41.79 | 49.21 | 95.94 | 83.64 | 1.39 | 44.65 | 20.75 |
| 13 | Insolatio (Hitzschlag, coup de chaleur) | 166 | 10 | 20 | 1 | 3 | 1 | 3 | ...... | 2.31 | .84 | 1.78 | 1.35 | 2.20 | 1.39 | .70 | ...... |
| 14 | Meningitis cerebro-spinalis epidemica | 31 | 2 | 5 | ...... | 1 | ...... | 1 | 2 | .43 | .17 | .44 | ...... | .73 | ...... | .23 | .56 |
| 15 | Morbilli | 1,995 | 127 | 266 | ...... | 21 | 10 | 94 | 242 | 27.80 | 10.70 | 23.67 | ...... | 15.41 | 13.91 | 21.86 | 67.87 |
| 16 | Parotitis epidemica | 1,510 | 112 | 92 | 1 | 8 | 3 | 33 | 80 | 21.05 | 9.44 | 8.19 | 1.35 | 5.87 | 4.17 | 7.67 | 22.44 |
| 17 | Pneumonia crouposa sive lobaris | 447 | 72 | 42 | 1 | 13 | 3 | 19 | 32 | 6.23 | 6.07 | 3.74 | 1.35 | 9.54 | 4.17 | 4.42 | 8.97 |
| 18 | Rheumatismus articulorum | 1,226 | 155 | 120 | 9 | 20 | 2 | 78 | 37 | 17.09 | 13.06 | 10.68 | 12.17 | 14.67 | 2.78 | 18.14 | 10.38 |
| 19 | Scarlatina | 15 | ...... | ...... | ...... | ...... | ...... | 5 | 2 | .21 | ...... | ...... | ...... | ...... | ...... | 1.16 | .56 |
| 20 | Scorbutus | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 21 | Syphilis | 942 | 223 | 233 | 1 | 13 | 4 | 36 | 24 | 13.13 | 18.79 | 20.73 | 1.35 | 9.54 | 5.56 | 8.37 | 6.73 |
| 22 | Trachoma[2] | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 23 | Tuberculosis pulmonum | 268 | 42 | 61 | ...... | 7 | 3 | 26 | 13 | 3.74 | 3.54 | 5.43 | ...... | 5.14 | 4.17 | 6.05 | 3.65 |
| 24 | Tuberculosis ceterorum organorum[2] | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 25 | Typhus abdominalis | 1,371 | 432 | 208 | 2 | 16 | 28 | 100 | 27 | 19.11 | 36.40 | 18.51 | 2.70 | 11.74 | 38.94 | 23.26 | 7.57 |
| 26 | Typhus exanthematicus[2] | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 27 | Variola | 302 | 8 | 27 | ...... | 1 | 1 | 6 | 2 | 4.21 | .67 | 2.40 | ...... | .73 | 1.39 | 1.40 | .56 |
| 28 | Morbi auris | 926 | 170 | 165 | 3 | 9 | 5 | 28 | 22 | 12.91 | 14.32 | 14.68 | 4.05 | 6.60 | 6.95 | 6.51 | 6.17 |
| 29 | Morbi cordis | 360 | 95 | 65 | 4 | 4 | 1 | 18 | 13 | 5.02 | 8.00 | 5.78 | 5.41 | 2.93 | 1.39 | 4.19 | 3.65 |
| 30 | Morbi cutis | 8,844 | 2,021 | 1,618 | 23 | 126 | 31 | 196 | 123 | 123.26 | 170.26 | 143.98 | 31.08 | 92.45 | 43.12 | 45.58 | 34.49 |
| 31 | Morbi mentis | 122 | 22 | 19 | 1 | ...... | ...... | 14 | 10 | 1.70 | 1.85 | 1.69 | 1.35 | ...... | ...... | 3.26 | 2.80 |
| 32 | Morbi oculi | 882 | 214 | 190 | 18 | 35 | 8 | 38 | 42 | 12.29 | 18.03 | 16.91 | 24.32 | 25.68 | 11.13 | 8.84 | 11.78 |
| 33 | Morbi systemat. urin. et sexual (excl. ven. et syph.) | 1,380 | 329 | 249 | 13 | 22 | 6 | 58 | 30 | 19.23 | 27.71 | 22.15 | 17.56 | 16.14 | 8.34 | 13.49 | 8.41 |

VOLUNTEERS, 1898.

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Alcoholismus acutus, including delirium tremens | 516 | 3 | 20 | ...... | 25 | 8 | ...... | ...... | 5.40 | 1.09 | 7.77 | ...... | 16.62 | 13.58 | ...... | ...... |
| 2 | Bronchitis, all[1] | 7,405 | 162 | 215 | ...... | 133 | 20 | ...... | ...... | 78.99 | 58.91 | 83.56 | ...... | 88.44 | 83.96 | ...... | ...... |
| 3 | Cholera asiatica | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 4 | Cholera nostras[2] | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 5 | Diphtheria et croup | 42 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | .45 | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 6 | Dysenteria[2] | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 7 | Erysipelas | 58 | ...... | 2 | ...... | 7 | ...... | ...... | ...... | .62 | ...... | .78 | ...... | 4.65 | ...... | ...... | ...... |
| 8 | Febris intermittens (malaria) | 36,890 | 1,231 | 569 | ...... | 462 | 158 | ...... | ...... | 393.50 | 447.64 | 221.14 | ...... | 307.18 | 268.25 | ...... | ...... |
| 9 | Febris recurrens | 16,404 | 447 | 101 | ...... | 330 | 100 | ...... | ...... | 174.98 | 162.55 | 89.26 | ...... | 219.42 | 169.78 | ...... | ...... |
| 10 | Gonorrhea | 4,768 | 209 | 216 | ...... | 45 | 19 | ...... | ...... | 50.86 | 76.01 | 83.95 | ...... | 29.92 | 32.26 | ...... | ...... |
| 11 | Hernia | 709 | 26 | 22 | ...... | 33 | 5 | ...... | ...... | 7.56 | 9.45 | 8.55 | ...... | 21.94 | 8.49 | ...... | ...... |
| 12 | Influenza | 2,471 | 8 | 173 | ...... | 77 | 3 | ...... | ...... | 26.36 | 2.91 | 67.24 | ...... | 51.20 | 5.09 | ...... | ...... |
| 13 | Insolatio (Hitzschlag, coup de chaleur) | 273 | 10 | 2 | ...... | 4 | 6 | ...... | ...... | 2.91 | 3.64 | .78 | ...... | 2.66 | 10.19 | ...... | ...... |
| 14 | Meningitis cerebro-spinalis epidemica | 53 | ...... | 1 | ...... | ...... | ...... | ...... | ...... | .57 | ...... | .39 | ...... | ...... | ...... | ...... | ...... |
| 15 | Morbilli | 6,058 | 106 | 44 | ...... | 6 | 3 | ...... | ...... | 64.62 | 38.55 | 17.10 | ...... | 3.99 | 5.09 | ...... | ...... |
| 16 | Parotitis epidemica | 1,811 | 20 | 27 | ...... | 5 | ...... | ...... | ...... | 19.32 | 7.27 | 10.49 | ...... | 3.32 | ...... | ...... | ...... |
| 17 | Pneumonia crouposa sive lobaris | 749 | 16 | 16 | ...... | 13 | ...... | ...... | ...... | 7.99 | 5.82 | 6.22 | ...... | 8.64 | ...... | ...... | ...... |
| 18 | Rheumatismus articulorum | 845 | 15 | 18 | ...... | 17 | 8 | ...... | ...... | 9.01 | 5.45 | 6.99 | ...... | 11.30 | 5.09 | ...... | ...... |
| 19 | Scarlatina | 33 | 1 | 1 | ...... | ...... | ...... | ...... | ...... | .35 | .36 | .39 | ...... | ...... | ...... | ...... | ...... |
| 20 | Scorbutus | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 21 | Syphilis | 972 | 32 | 35 | ...... | 14 | 4 | ...... | ...... | 10.37 | 11.64 | 13.60 | ...... | 9.31 | 6.79 | ...... | ...... |
| 22 | Trachoma[2] | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 23 | Tuberculosis pulmonum | 389 | 17 | 5 | ...... | 7 | ...... | ...... | ...... | 4.15 | 6.18 | 1.94 | ...... | 4.65 | ...... | ...... | ...... |
| 24 | Tuberculosis ceterorum organorum[2] | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 25 | Typhus abdominalis | 15,794 | 538 | 162 | ...... | 224 | 78 | ...... | ...... | 168.48 | 195.63 | 62.96 | ...... | 148.94 | 132.42 | ...... | ...... |
| 26 | Typhus exanthematicus[2] | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... | ...... |
| 27 | Variola | 68 | ...... | 1 | ...... | ...... | 4 | ...... | ...... | .73 | ...... | .39 | ...... | ...... | 6.79 | ...... | ...... |
| 28 | Morbi auris | 667 | 16 | 39 | ...... | 22 | ...... | ...... | ...... | 7.11 | 5.82 | 15.16 | ...... | 14.63 | ...... | ...... | ...... |
| 29 | Morbi cordis | 312 | 20 | 10 | ...... | 9 | 5 | ...... | ...... | 3.33 | 7.27 | 3.89 | ...... | 5.98 | 8.49 | ...... | ...... |
| 30 | Morbi cutis | 4,153 | 251 | 204 | ...... | 63 | 20 | ...... | ...... | 44.30 | 91.28 | 79.28 | ...... | 41.89 | 33.96 | ...... | ...... |
| 31 | Morbi mentis | 94 | 3 | 2 | ...... | 4 | ...... | ...... | ...... | 1.00 | 1.09 | .78 | ...... | 2.66 | ...... | ...... | ...... |
| 32 | Morbi oculi | 852 | 46 | 27 | ...... | 25 | 5 | ...... | ...... | 9.09 | 16.73 | 10.49 | ...... | 16.62 | 8.49 | ...... | ...... |
| 33 | Morbi systemat. urin. et sexual (excl. ven. et syph.) | 1,301 | 69 | 44 | ...... | 30 | 5 | ...... | ...... | 13.88 | 25.49 | 17.10 | ...... | 19.94 | 8.49 | ...... | ...... |

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[1] Acute not tabulated separately.

[2] Not tabulated separately.

## INTERNATIONAL TABLE VII.—*Admissions of important diseases, by months (absolute numbers).*

### VOLUNTEERS AND REGULARS, 1899.

| No. | Diseases of the international nosological table. | Admissions by months. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan. | Feb. | Mar. | Apr. | May. | June. | July. | Aug. | Sept. | Oct. | Nov. | Dec. |
| 1 | Alcoholismus acutus, including delirium tremens | 174 | 138 | 149 | 133 | 115 | 101 | 124 | 111 | 115 | 109 | 151 | 109 |
| 2 | Bronchitis, all[1] | 2,097 | 1,461 | 1,185 | 654 | 495 | 326 | 294 | 308 | 322 | 358 | 434 | 441 |
| 3 | Cholera asiatica | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| 4 | Cholera nostras[2] | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| 5 | Diphtheria et croup | 6 | 4 | 4 | 1 | 8 | 6 | 8 | 7 | 8 | 4 | 2 | ....... |
| 6 | Dysenteria[2] | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| 7 | Erysipelas | 7 | 11 | 9 | 15 | 10 | 8 | 5 | 5 | 9 | 2 | 8 | 3 |
| 8 | Febris intermittens (malaria) | 5,193 | 4,480 | 4,188 | 2,838 | 1,927 | 1,825 | 2,256 | 3,101 | 3,112 | 3,594 | 4,203 | 4,567 |
| 9 | Febris recurrens | 2,279 | 1,533 | 1,962 | 1,145 | 1,141 | 949 | 1,063 | 1,355 | 1,157 | 1,583 | 1,642 | 1,393 |
| 10 | Gonorrhea | 1,067 | 860 | 848 | 651 | 661 | 574 | 579 | 620 | 572 | 684 | 670 | 662 |
| 11 | Hernia | 113 | 78 | 68 | 61 | 76 | 84 | 60 | 53 | 85 | 50 | 29 | 48 |
| 12 | Influenza | 3,059 | 1,275 | 732 | 128 | 55 | 45 | 32 | 59 | 68 | 47 | 53 | 77 |
| 13 | Insolatio (Hitzschlag, coup de chaleur) | 4 | 13 | 26 | 40 | 27 | 36 | 11 | 14 | 5 | 10 | 13 | 5 |
| 14 | Meningitis cerebro-spinalis epidemica | 18 | 5 | 1 | 7 | 3 | ....... | ....... | 3 | 1 | 2 | ....... | 2 |
| 15 | Morbilli | 826 | 417 | 335 | 230 | 271 | 132 | 52 | 62 | 96 | 72 | 25 | 237 |
| 16 | Parotitis epidemica | 283 | 290 | 320 | 156 | 149 | 91 | 91 | 130 | 85 | 93 | 61 | 90 |
| 17 | Pneumonia crouposa sive lobaris | 145 | 109 | 79 | 59 | 37 | 16 | 35 | 26 | 25 | 41 | 26 | 31 |
| 18 | Rheumatismus articulorum | 208 | 154 | 173 | 169 | 115 | 122 | 113 | 135 | 124 | 116 | 119 | 99 |
| 19 | Scarlatina | 9 | 9 | 2 | ....... | ....... | ....... | 2 | ....... | ....... | ....... | ....... | ....... |
| 20 | Scorbutus | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| 21 | Syphilis | 221 | 154 | 146 | 115 | 98 | 87 | 105 | 112 | 95 | 106 | 123 | 114 |
| 22 | Trachoma[2] | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| 23 | Tuberculosis pulmonum | 49 | 32 | 38 | 23 | 37 | 31 | 36 | 41 | 34 | 36 | 31 | 32 |
| 24 | Tuberculosis ceterorum organorum[2] | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| 25 | Typhus abdominalis | 215 | 194 | 209 | 243 | 195 | 218 | 175 | 161 | 233 | 125 | 110 | 106 |
| 26 | Typhus exanthematicus[2] | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... | ....... |
| 27 | Variola | 76 | 46 | 60 | 29 | 7 | 10 | 4 | 3 | 20 | 18 | 48 | 26 |
| 28 | Morbi auris | 123 | 109 | 101 | 79 | 122 | 125 | 122 | 122 | 109 | 125 | 101 | 90 |
| 29 | Morbi cordis | 63 | 47 | 44 | 40 | 48 | 25 | 41 | 69 | 44 | 54 | 40 | 45 |
| 30 | Morbi cutis | 780 | 699 | 767 | 799 | 951 | 959 | 1,153 | 1,342 | 1,334 | 1,269 | 1,358 | 1,571 |
| 31 | Morbi mentis | 17 | 12 | 13 | 17 | 12 | 18 | 16 | 17 | 14 | 19 | 21 | 12 |
| 32 | Morbi oculi | 173 | 137 | 130 | 109 | 118 | 114 | 75 | 132 | 125 | 95 | 107 | 112 |
| 33 | Morbi systemat. urin. et sexual (excl. ven. et syph.) | 275 | 217 | 190 | 144 | 139 | 163 | 170 | 197 | 185 | 165 | 128 | 114 |

## VOLUNTEERS, 1898.

(Not organized until May.)

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Alcoholismus acutus, including delirium tremens | | | | | 11 | 24 | 63 | 67 | 101 | 93 | 98 | 115 |
| 2 | Bronchitis, all[1] | | | | | 457 | 761 | 1,087 | 974 | 964 | 951 | 1,230 | 1,511 |
| 3 | Cholera asiatica | | | | | | | | | | | | |
| 4 | Cholera notras[2] | | | | | | | | | | | | |
| 5 | Diphtheria et croup | | | | | 6 | 13 | 2 | 7 | 4 | 2 | 6 | 2 |
| 6 | Dysenteria[2] | | | | | | | | | | | | |
| 7 | Erysipelas | | | | | 1 | 8 | 8 | 14 | 7 | 8 | 14 | 7 |
| 8 | Febris intermittens (malaria) | | | | | 865 | 2,362 | 5,623 | 11,423 | 8,630 | 4,859 | 3,526 | 2,522 |
| 9 | Febris recurrens | | | | | 46 | 511 | 2,045 | 5,084 | 4,665 | 2,339 | 1,498 | 1,194 |
| 10 | Gonorrhea | | | | | 204 | 564 | 883 | 835 | 714 | 724 | 706 | 627 |
| 11 | Hernia | | | | | 16 | 84 | 146 | 158 | 132 | 104 | 86 | 69 |
| 12 | Influenza | | | | | 155 | 229 | 228 | 121 | 137 | 257 | 212 | 1,393 |
| 13 | Insolatio (Hitzschlag, coup de chaleur) | | | | | 15 | 34 | 131 | 61 | 44 | 7 | 1 | 2 |
| 14 | Meningitis cerebro-spinalis epidemica | | | | | 2 | 8 | 7 | 16 | 10 | 4 | 3 | 4 |
| 15 | Morbilli | | | | | 285 | 1,343 | 1,716 | 1,492 | 570 | 319 | 260 | 232 |
| 16 | Parotitis epidemica | | | | | 42 | 292 | 300 | 342 | 310 | 168 | 183 | 226 |
| 17 | Pneumonia crouposa sive lobaris | | | | | 129 | 144 | 135 | 69 | 56 | 73 | 82 | 106 |
| 18 | Rhematismus articulorum | | | | | 17 | 91 | 145 | 173 | 154 | 113 | 94 | 111 |
| 19 | Scarlatina | | | | | | | 2 | 20 | 4 | 4 | 3 | 2 |
| 20 | Scorbutus | | | | | | | | | | | | |
| 21 | Syphilis | | | | | 11 | 98 | 142 | 164 | 155 | 162 | 171 | 154 |
| 22 | Trachoma[2] | | | | | | | | | | | | |
| 23 | Tuberculosis pulmonum | | | | | 9 | 60 | 66 | 76 | 59 | 45 | 48 | 55 |
| 24 | Tuberculosis ceterorum organorum[2] | | | | | | | | | | | | |
| 25 | Typhus abdominalis | | | | | 33 | 368 | 2,087 | 5,545 | 5,155 | 2,537 | 822 | 249 |
| 26 | Typhus exanthematicus[2] | | | | | | | | | | | | |
| 27 | Variola | | | | | | 5 | | 4 | 15 | 15 | 18 | 16 |
| 28 | Morbi auris | | | | | 85 | 104 | 132 | 141 | 115 | 94 | 50 | 73 |
| 29 | Morbi cordis | | | | | 18 | 39 | 65 | 60 | 63 | 49 | 29 | 33 |
| 30 | Morbi cutis | | | | | 219 | 716 | 974 | 999 | 624 | 382 | 338 | 439 |
| 31 | Morbi mentis | | | | | 3 | 23 | 24 | 20 | 11 | 9 | 8 | 10 |
| 32 | Morbi oculi | | | | | 102 | 180 | 170 | 138 | 107 | 93 | 78 | 87 |
| 33 | Morbi systemat. urin. et sexual (excl. ven. et syph.) | | | | | 51 | 153 | 276 | 248 | 246 | 156 | 169 | 150 |

[1] Acute not tabulated separately.

[2] Not tabulated separately.

Respectfully submitted.

GEO. M. STERNBERG,
*Surgeon-General United States Army.*

HON. ELIHU ROOT,
*Secretary of War.*

# REPORT OF THE PAYMASTER-GENERAL.

# ANNUAL REPORT

OF

# THE PAYMASTER-GENERAL.

WAR DEPARTMENT,
PAYMASTER-GENERAL'S OFFICE,
*Washington, October 6, 1900.*

SIR: I have the honor to transmit herewith my annual report for the fiscal year ended June 30, 1900.

Respectfully,

A. E. BATES,
*Paymaster-General, United States Army.*

The SECRETARY OF WAR.

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WAR DEPARTMENT,
PAYMASTER-GENERAL'S OFFICE,
*Washington, September 20, 1900.*

SIR: I have the honor to submit the following report of this office for the fiscal year ended June 30, 1900:

| | |
|---|---|
| On July 1, 1899, officers of the Pay Department were charged with public funds aggregating | $9,682,126.44 |
| During the fiscal year 1900 these officers received: | |
| From the United States Treasury | 37,935,750.19 |
| From soldiers' deposits | 3,215,544.66 |
| From Army paymasters' collections | 900,386.93 |
| Total balances and receipts | 51,733,808.22 |
| Accounted for as follows: | |
| Expended on account of pay of the Army (regulars and volunteers) | 36,656,600.25 |
| Expended on account of extra pay to Regular Army, war with Spain | 187,947.90 |
| Expended on account of extra pay to volunteers, war with Spain | 962,206.29 |
| Expended on account of mileage to officers | 351,163.41 |
| Expended on account of Military Academy | 322,292.01 |
| Expended on account of volunteers, Treasury certificates | 251,322.92 |
| Expended on account of emergency fund, War Department, "to disband the Cuban army" | 1,642,650.00 |
| Surplus funds deposited to credit of United States Treasurer | 3,655,715.43 |
| Army paymasters' collections deposited to credit of United States Treasurer | 899,260.91 |
| Balances charged officers June 30, 1900 | 6,804,649.10 |
| Total | 51,733,808.22 |

A comparison of the expenditures of the fiscal year of 1900 with those of the fiscal year of 1899 shows a net decrease of $33,382,147.84.

The act of Congress of March 2, 1899, provided for a regular force of 65,000 men and the organization, if necessary, of 35,000 volunteers. These volunteers were called into service in the latter part of the summer and fall of 1899, and since their muster into the service, they, as well as the regulars, have been regularly paid.

*Number and amounts of deposits received from and repaid to soldiers on discharge from July 1, 1872, to June 30, 1900.*

| Fiscal year ending June 30— | Deposits received. | | Deposits repaid. | | |
|---|---|---|---|---|---|
| | Number. | Amount. | Number. | Principal. | Interest. |
| 1873 | .......... | $209,850.38 | .......... | .................. | ............ |
| 1874 | .......... | 346,609.56 | .......... | .................. | ............ |
| 1875 | .......... | 825,255.80 | .......... | .................. | ............ |
| 1876 | .......... | 435,912.68 | .......... | .................. | ............ |
| 1877 | 5,524 | 328,585.05 | 14,752 | $1,041,001.57 | $49,713.89 |
| 1878 | 5,524 | 346,243.94 | 3,182 | 145,667.91 | 8,420.24 |
| 1879 | 6,087 | 470,770.38 | 4,926 | 257,854.48 | 17,706.93 |
| 1880 | 8,635 | 477,174.44 | 8,084 | 392,568.93 | 30,680.97 |
| 1881 | 8,942 | 524,112.72 | 8,148 | 501,949.77 | 38,722.62 |
| 1882 | 6,890 | 448,561.83 | 7,570 | 428,482.44 | 31,658.73 |
| 1883 | 7,902 | 407,544.68 | 6,695 | 363,578.34 | 26,123.60 |
| 1884 | 7,114 | 389,267.55 | 8,184 | 404,291.57 | 31,124.93 |
| 1885 | 7,033 | 427,617.96 | 6,930 | 401,902.22 | 38,249.44 |
| 1886 | 7,261 | 469,031.55 | 7,835 | 490,506.79 | 46,583.23 |
| 1887 | 6,889 | 436,574.98 | 6,988 | 389,083.12 | 34,758.24 |
| 1888 | 7,409 | 386,944.10 | 6,346 | 323,952.97 | 29,327.01 |
| 1889 | 7,892 | 383,798.34 | 7,664 | 396,468.53 | 33,647.38 |
| 1890 | 7,634 | 395,128.82 | 7,206 | 411,039.74 | 41,596.60 |
| 1891 | 6,790 | 403,473.15 | 9,106 | 553,047.45 | 51,797.70 |
| 1892 | 5,570 | 334,464.70 | 8,019 | 410,873.15 | 38,894.26 |
| 1893 | 5,870 | 282,248.04 | 5,317 | 268,835.46 | 26,059.07 |
| 1894 | 5,914 | 361,830.76 | 5,786 | 290,088.98 | 27,014.32 |
| 1895 | 6,284 | 318,270.73 | 5,880 | 308,372.45 | 28,766.42 |
| 1896 | 8,778 | 420,338.87 | 6,486 | 359,200.48 | 38,614.66 |
| 1897 | 17,878 | 535,392.64 | 6,976 | 345,559.55 | 34,850.53 |
| 1898 | 21,856 | 613,513.51 | 17,377 | 561,518.64 | 45,815.61 |
| 1899 | 37,842 | 1,496,762.31 | 28,508 | 988,774.63 | 61,273.95 |
| 1900 | 91,461 | 3,215,544.66 | 27,571 | 1,028,146.34 | 43,234.89 |
| Total | 308,979 | 15,190,824.13 | 225,536 | 11,062,765.46 | 854,635.22 |
| Amount remaining to credit of depositors | .......... | .................. | .......... | 4,128,058.67 | ............ |

NOTE.—Repayments of deposits to soldiers from July 1, 1872, to June 30, 1896, were not recorded by fiscal years. The repayments of 1877 include all deposits repaid prior thereto.

The above table gives a complete history of soldiers' deposits since the passage of the act authorizing them, May 15, 1872. As will be seen by reference to the table, the number and amount of the deposits varied comparatively little from the beginning of the system until the fiscal year of 1897 and the breaking out of the Spanish war. Although the greater amount of the increase in deposits must have come from the volunteers, still it is evident that the soldiers in the field take advantage of this privilege to a greater extent than soldiers in garrison.

## MILEAGE.

The mileage provisions of the act of May 26, 1900, have worked satisfactorily to the Army, with the exception of the application of "agreement-road" deductions.

The agreement made by different roads which compete with land-grant, bond-aided, and 50-per-cent roads, is of such a transitory and changing nature that it is found practically impossible to publish a distance table that would be valuable as a guide for payment. Notwithstanding the great importance and saving to the Government through their use in the transportation of troops and army supplies, the expense, time, and labor involved in the multiplicity of tables required under such changing conditions are out of all proportion to the amount saved to the Government by recognition of "agreement roads" in calculation of distances and deductions for payment of mileage to the individual officer.

I therefore recommend that the words "or agreement," as appearing in the mileage provision of the act of May 26, 1900, be stricken out, and the distance tables be computed as therein provided, deductions to be made only for such proportion of travel as may be over land-grant, bond-aided, and 50-per-cent roads, and for such travel as may be performed over other railroads on transportation requests furnished by the Quartermaster's Department at the request of the officer.

*Mileage disbursements for the fiscal year ending June 30, 1900.*

| | 1898. | Jan. 1, 1899. | 1899. | 1900. | Total. |
|---|---|---|---|---|---|
| Inspection of the Army: | | | | | |
| By the General Commanding the Army, accompanied by his aides, and the generals commanding the several military departments, accompanied by officers of their staffs, as provided by Paragraph 193, Army Regulations | | | $7.28 | $5,795.22 | $5,802.50 |
| By officers of the Adjutant-General's Department | | | 203.70 | | 203.70 |
| By officers of the Inspector-General's Department | | | 121.06 | 7,555.93 | 7,676.99 |
| By officers of the Quartermaster-General's Department | | | 191.41 | 7,418.03 | 7,609.44 |
| By officers of the Commissary-General's Department | | | 146.86 | 1,557.36 | 1,704.22 |
| By officers of the Medical Department | | | 967.27 | 2,723.21 | 3,690.48 |
| By officers of the Ordnance Department | | | 251.58 | 10,410.48 | 10,662.06 |
| By officers of the Signal Corps | | | 199.08 | 1,579.08 | 1,778.16 |
| By officers of artillery (artillery inspection) | | | | 732.90 | 732.90 |
| Inspection of— | | | | | |
| Troops by line officers | | | 43.82 | 787.84 | 831.66 |
| Horses by line officers | | | | 2,283.83 | 2,283.83 |
| Transports by line officers | | | | 197.54 | 197.54 |
| Buildings by line officers | | | 35.28 | 720.97 | 756.25 |
| Ordnance by line officers | | | | 371.79 | 371.79 |
| Engineer property by line officers | | | | 219.77 | 219.77 |
| Other property by line officers | | | | 249.67 | 249.67 |
| Election in Porto Rico by line officers | | | | [1] 427.84 | 427.84 |
| Relief work in Porto Rico by line officers | | | | [1] 106.68 | 106.68 |
| Colleges by line officers | | | | 213.14 | 213.14 |
| Commissary stores by line officers | | | | 13.58 | 13.58 |
| Land, roads, bridges, and libraries by engineer officers | | | | 83.73 | 83.73 |
| Seacoast fortifications by artillery officers | | | | 663.74 | 663.74 |
| nspection and instruction of the National Guard | | | | 217.98 | 217.98 |
| Total for inspection of the Army | | | 2,167.34 | 44,330.31 | 46,497.65 |
| Change of station | $119.48 | $1,759.21 | 17,368.62 | 160,950.43 | 180,197.74 |
| Travel in Europe and other foreign countries | 21.68 | | 755.16 | 3,152.52 | 3,929.36 |
| Boards of examination to examine officers for promotion | | | 758.01 | 8,663.12 | 9,421.13 |
| Retiring boards and officers retired and ordered home | | 13.72 | 720.08 | 5,829.79 | 6,563.59 |
| Recruiting duty | | | 2,048.42 | 63,495.98 | 65,544.40 |
| Travel of general officers and their aids, other than for inspection | | | 75.32 | 6,596.02 | 6,671.34 |
| Courts-martial and courts of inquiry, to and from | | | 657.02 | 6,869.36 | 7,526.38 |
| Payment of troops | | | 225.48 | 5,916.04 | 6,141.52 |
| Officers of the line ordered to express offices to obtain money for payment of troops | | | 15.52 | 183.71 | 199.23 |
| Boards of survey | | | 15.12 | 188.07 | 203.19 |
| Treasurer and professor, Military Academy (Military Academy duty) | | | | 166.32 | 166.32 |
| Instructions of Secretary of War (confidential duty) | | | 31.92 | 3,718.35 | 3,750.27 |
| Target practice and inspection of target ranges | | | 5.88 | 256.79 | 262.67 |
| Battery competitions—provisions of G. O. 41, A. G. O., 1896 | | | | 1,693.83 | 1,693.83 |
| Exploring duty in Alaska | 59.56 | | | 603.43 | 662.99 |
| Travel of attending surgeons | | | 49.42 | 185.50 | 234.92 |
| Conducting prisoners—sick and insane | | | 445.75 | 155.75 | 601.50 |
| Attending funerals of officers and other deceased officials | | | 35.56 | 2,088.42 | 2,123.98 |
| Guarding funds for Quartermaster and Commissary Departments | | | 2.94 | 84.39 | 87.33 |
| Line officers on business for Quartermaster and Commissary Departments | | | | 131.80 | 131.80 |
| Witnessing issue of rations to Cubans | | | .63 | 144.55 | 145.18 |
| Witnessing payment of Cuban army | | | 19.07 | 19.07 | 38.14 |
| Board to purchase land for Forts Casey and Wilson, Wash | | | | 7.14 | 7.14 |
| Board on location of military sites | | | | 68.88 | 68.88 |

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[1] $515.45 of these amounts has been refunded to the Pay Department by the treasurer of Porto Rico, the same not being payable out of the funds of this department.

*Mileage disbursements for the fiscal year ending June 30, 1900*—Continued.

| | 1898. | Jan. 1, 1899. | 1899. | 1900. | Total. |
|---|---|---|---|---|---|
| Board to locate military site at Fort Mackenzie, Wyo | | | | $372.31 | $372.31 |
| Board to select sites and barracks at Fort Williams, Me | | | | 92.44 | 92.44 |
| Board on location and cost of quarters at Forts Taylor and McCree, Fla | | | | 300.20 | 300.20 |
| Board on location of public buildings at Fort Leavenworth, Kans | | | | 550.36 | 550.36 |
| Board on character and plan of officers' quarters at military posts | | | | 66.08 | 66.08 |
| Board of civil assessments at Fort Monroe, Va | | | | 47.04 | 47.04 |
| Board on harbor charts | | | | 33.04 | 33.04 |
| Board to determine tide gauges for range finders | | | | 208.25 | 208.25 |
| Board to investigate complaints about transport Manuense | | | | 15.40 | 15.40 |
| Board to investigate collision of transport Sumner | | | | 153.02 | 153.02 |
| Board on location of War College | | | | 167.23 | 167.23 |
| Board to investigate fitting up and equipment of hospital ships Missouri and Relief | | | | 1,376.54 | 1,376.54 |
| Board to investigate charges against General Funston | | | | 12.16 | 12.16 |
| Inspection of transport Sumner by heads of staff departments at Washington | | | | 159.60 | 159.60 |
| Collecting military information | | | | 203.25 | 203.25 |
| Distributing internal-revenue stamps and custom funds in Porto Rico | | | | [1] 30.59 | 30.59 |
| Orders fail to state special duty enjoined | $104.00 | $590.93 | $782.70 | 1,917.21 | 3,394.84 |
| Total | 304.72 | 2,363.86 | 26,179.96 | 321,204.29 | 350,052.83 |

[1] $515.45 of these amounts has been refunded to the Pay Department by the treasurer of Porto Rico, the same not being payable out of the funds of this department.

### SYSTEM OF PAYMENT.

During the past year all payments to the Army have been made monthly, except to troops serving in the Philippines. Previous to the declaration of war these payments were made by check or in currency by express. After the organization of the volunteer force it was found impracticable to pay by the above-mentioned method the forces in the field, and they have been paid by the paymasters in person.

The system of payment by sending money by express is approved whenever, in the judgment of the chief paymaster and the general commanding the department, it is applicable.

### INCREASE IN THE REGULAR FORCE OF THE PAY CORPS.

The increase in the regular force of the Pay Corps and its reorganization will be made the subject of a separate report to be submitted later.

### PERSONNEL.

Since July 1, 1899, the following changes in the personnel of the Pay Corps have occurred: Brig. Gen. A. B. Carey, retired July 12, 1899, by operation of law. (Sec. 1, act June 30, 1882.)

Col. A. E. Bates, assistant paymaster-general, appointed Paymaster-General (vice Carey retired) to date July 12, 1899.

The appointment of Colonel Bates promoted Lieut. Col. C. I. Wilson to colonel and assistant paymaster-general; Maj. Geo. W. Baird to lieutenant-colonel and deputy paymaster-general, and made a vacancy in the list of majors, which was filled by the appointment thereto of

Capt. John Murphy, Fourteenth United States Infantry, to date July 12, 1899.

Maj. John Murphy was, at his own request, retired July 17, 1899, having served more than forty years.

Maj. Charles Newbold, additional paymaster, United States Volunteers, was appointed major and paymaster, United States Army (vice Murphy retired), to date July 22, 1900. Maj. John M. Sears, additional paymaster, United States Volunteers, was honorably discharged August 15, 1899. Maj. John S. Witcher, paymaster, United States Army, retired September 8, 1899, on account of disability incurred in the service. Maj. Hamilton S. Wallace, additional paymaster, United States Volunteers, appointed major and paymaster, United States Army (vice Witcher retired), to date from September 9, 1899. Maj. M. F. Sheary, additional paymaster, United States Volunteers, honorably discharged, to date October 31, 1899. Maj. Wm. H. Hamner, paymaster, United States Army, retired January 18, 1900. Capt. Alfred S. Frost, Twenty-second United States Infantry, appointed major and paymaster, United States Army (vice Hamner retired), to date January 20, 1900.

Maj. Alfred S. Frost, paymaster, United States Army, retired, February 14, 1900, on account of disability incurred in the service. Maj. George W. Fishback, additional paymaster, United States Volunteers, honorably discharged to date February 15, 1900. Francis L. Payson, appointed major and paymaster, United States Army (vice Frost, retired) to date March 5, 1900.

## PAYMASTERS' CLERKS.

The legislative adoption of the recommendation of my predecessor and myself for the increased service pay of the "paymasters' clerks" is working with admirable results. The corps of clerks now evince an ambition and zeal in the performance of their duty that is very gratifying indeed to the Paymaster-General.

The number of clerks allowed is such that the Paymaster-General is enabled to supply the deficiency in clerical work of service with our Army in the tropics, and at the same time have a reserved force on duty in the Paymaster-General's Office, performing the ordinary clerical work of that office in its most important divisions, from which to draw to fill the places of those clerks whose health gives out in the hard service in the Philippines and Cuba.

## CLERICAL FORCE.

In my report for year 1899 I stated and now repeat:

> Too much can not be said regarding the zeal and intelligence of the regular trained force of clerks in this office. No enlisted men or commissioned officers of the Army have shown more patriotic zeal for the accomplishment of the duties imposed upon them than these old tried servants of the Government. The work of these men is such that only trained clerks are of great value, and I earnestly recommend that the rules of the civil service be applied to the clerks in the Paymaster-General's Office, and that they be strictly adhered to. Changes in the clerical force for any reason except to increase efficiency, and that upon the recommendation of the Paymaster-General, should never be made.

I also recommend legislation authorizing the retirement of clerks on half pay after 70 years of age and thirty years' service.

## EMERGENCY FUND.

The $3,000,000 ("emergency fund") appropriated under the act of January 5, 1899, were taken to Havana, Cuba, under the immediate charge of my predecessor in office, on the 11th of March, 1899.

The first distribution to the disbanding Cuban army was made May 27, 1899. The last was practically made on the 12th of September, 1899, and on the 21st of that month the unexpended balance, amounting to $455,250, was turned into the Treasury of the United States to the credit of the appropriation named,

This Department was charged with the accountability and responsibility of this fund, and it was disbursed under the direction of the division commander in Cuba. The payment to each noncommissioned officer and man of the Cuban army was $75, and the number paid 33,930.

## MONTHLY, BIMONTHLY, AND MUSTER-OUT PAYMENTS.

The work of the Pay Department, from the commencement of the Spanish-American war to its close and during the continuance of hostilities in the Philippines in suppression of insurrection, has been phenomenally laborious and exacting, but the officers of this department have met every requirement of duty with zeal and promptitude and to the satisfaction of the Army.

A state of war has not been permitted to interfere with the regularity of monthly payments, except in the Philippines, where bimonthly payments have been preferred.

As stated in my preceding annual report, the muster out and payment of the Volunteer Army, called into service under the acts of April 22 and May 11, 1898, were begun and completed between September 5, 1898, and June 22, 1899, with the exception of the State volunteer regiments then serving in the Philippines. The muster out and payment of these last-named troops began on July 28, 1899, and were completed on November 23, 1899, by the payment of the First Tennessee Volunteer Infantry. All of the volunteer organizations that served in the Philippines were mustered out in San Francisco, Cal.

## CHIEF DISBURSING OFFICE.

Previous to my appointment to the position of Paymaster-General, there was stationed in Washington one paymaster designated as post paymaster who, under the direction of the Secretary of War, paid the officers stationed in Washington, the troops at posts near here, including the forts on the Delaware River, Fort McHenry, Fortress Monroe, and Fort Caswell, N. C., as well as the accounts of all retired officers, enlisted men, etc., presented to him. There were also stationed in Washington such other paymasters as were demanded by the exigencies of service, who were on duty in the Paymaster-General's Office, and by whom all claims coming from the Auditor were paid, and in fact all accounts not paid by the post paymaster.

For the better organization of the office and economical distribution of force, in October, 1899, I consolidated all payments made in this city into one division immediately under the direction of the Paymaster-General and called it the disbursing division of the Paymaster-General's Office. This division was placed under the charge of Lieut. Col. G. W.

Baird, deputy paymaster-general, as chief disbursing officer, Paymaster-General's Office, and four paymasters were ordered to report to him as assistants.

In this office has been concentrated an immense amount of work of a miscellaneous character, besides the work coming from the Auditor's Office, where all claims are adjusted and then sent to the Paymaster-General's Office for settlement. An idea of the increase of work coming from this source may be obtained from the following facts: The Auditor reports (page 7, Annual Report for 1900) that the number of military claims settled by his office and transferred to the Pay Department for the fiscal year ended June 30, 1898, was 14,568; for the fiscal year ended June 30, 1899, it was 16,938; for the fiscal year ended June 30, 1900, it was 56,764. In addition to this increase of more than 300 per cent in the number of claims sent to the department for settlement, there was an increase at the rate of about 50 per cent in the clerical work required in the settlement of these claims caused by the change made in the Auditor's Office by which about half of the work formerly done in that office has now been thrown into the pay office. The chief disbursing officer says in his report:

> I have now 17 clerks other than those employed on duties connected with the post paymaster's office, an increase of 15 properly chargeable to the increased work contingent upon the changed methods of the Auditor above mentioned.

The system of allotment has also created a very great amount of clerical work in this office, as there have been to date 4,300 allotters; and as some allotments are dropped and others added from time to time, it makes an immense amount of clerical work.

During the fiscal year ended June 30, 1900, there was disbursed in this office by the chief and four assistants, paid on vouchers, $4,930,364.56, which represents 62,664 vouchers.

General Order No. 141, August 4, 1899, by which volunteer officers were allowed to be paid on individual vouchers for the benefit of their families, all of which have been paid here, has also thrown a large increase of work into this office.

### TRANSFERS BY CABLE.

The 26th of September, 1899, marked the initiation of a plan for supplying in part, from moneys in the island, the currency needed in the Philippines for the payment of the troops.

The custom prior to that date had been to send in advance with an outgoing paymaster, on Government transport and adequately guarded, the actual cash requisite for a two months' payment, in denominations ranging from 5 cents to $20.

Between eight and nine millions of American money had thus been transported to the Philippines, when it became obvious that the cable might, to a material extent, supplement shipments by transports, and thus modify the monthly drain on the Treasury. Accordingly, conferences were had with the Secretaries of War and Treasury, and correspondence with the assistant treasurer at New York, which resulted in an effective arrangement whereby the chief paymaster at Manila is enabled to acquire unemployed currency from Manila banking houses by cabling this office the amount obtainable there, whereupon a check for such amount is mailed from Washington to the New

York agents of the Manila banks, and the transaction is closed without more expense than the cost of cablegram.

From September 26, 1899, to June 30, 1900, $2,605,000 have thus been inexpensively, and without risk of shipment, added to the needs of the Philippine army.

By a similar cable and check transaction, and through the courteous cooperation of the Postmaster-General, $700,000 of unneeded surplus of postal revenues in Cuba and Porto Rico have been turned over for part payment of the army in those places up to June 30 of this year. The Post-Office Department has thus been saved the cost as well as the risk of shipment of this money to the United States.

## CHINA.

### TEN AND TWENTY PER CENT INCREASE OF PAY TO OFFICERS AND ENLISTED MEN SERVING IN PORTO RICO, CUBA, THE PHILIPPINE ISLANDS, HAWAII, AND THE TERRITORY OF ALASKA.

Congress, no doubt in recognition of the extraordinary hardships imposed upon those portions of the Army serving in the places above named, made provision for rewarding such service in the act of May 26 of this year. Unfortunately the very specific terms of that provision restricts its benefits to service in places therein named, and, as a consequence, excludes the troops serving in China or who may serve in Guam, which is one of the Ladrone Islands, from participation in the bonus.

In order that officers and enlisted men serving beyond the limits of the United States and in places not named in the act of May 26, 1900, and in view of the fact that the Comptroller decided on June 25, 1900, that the benefits of said act could not apply to service other than in the places specified, I have the honor to suggest that Congress be asked to legislate in general terms that—

> The pay proper of all officers and enlisted men now serving, or who have served since May 26, 1900, in Alaska, or in any countries beyond the limits of the United States, shall be increased 10 per centum for officers and 20 per centum for enlisted men over and above the rates of pay proper as fixed by law in time of peace, and that the time of such service shall be counted from the date of embarkation from the United States until date of return thereto.

## ALLOTMENTS.

The system of allotments of pay by enlisted men of the Army, provided for in section 16, act of March 2, 1899, went into full operation in September, 1899, under regulations prescribed by the Secretary of War. Up to June 30, 1900, there has been paid an aggregate sum of $123,913.16 to 3,974 allottees.

The Comptroller of the Treasury, in passing upon the form of vouchers for payment to allottees, submitted to him in accordance with section 273 Revised Statutes, held that—

> No payment should be made to an allottee by a paymaster until he has evidence that the soldier is in the service and entitled to be paid the full amount allotted for the month for which payment is to be made, over and above all lawful stoppages chargeable against the soldier's pay for that month.

This requirement frequently led to delay in payments to allottees, as paymasters charged with such payments were unwilling to take the risk of making payments where the allotters were engaged in actual hostilities, and where it would in many cases be impossible to secure advice of death, etc., in season to prevent payments, which, under the ruling of the Comptroller, would be suspended or disallowed in the settlement of their accounts.

The act of May 26, 1900, however, provides that allotments—

> That have been or shall be paid to the designated allottees after the expiration of one month subsequent to the month in which said allotments accrued, shall pass to the credit of the disbursing officer who has made or shall make such payments: *Provided,* That said disbursing officer shall, before making payment of said allotments, use, or shall have used, due diligence in obtaining and making use of all information that may have been received at the War Department relating to the grantors of the allotments.

Under these provisions of law, paymasters can now pay the allotments with reasonable surety that payments will not be disallowed in case of the death of a grantor of which the paymaster has not been advised, and allottees will receive with greater regularity the amount due them.

## DISTRIBUTION OF OFFICERS.

There are at present 24 officers of this Department serving in the United States, inclusive of Alaska, and 29 serving beyond the limits of the United States, inclusive of 2 in China. Changes of station are now being made which will reduce to 21 the officers on home service and increase to 32 the officers on foreign and Alaskan service.

At the date of this report 543 posts are garrisoned by our troops, exclusive of those in China, 420 of them being scattered throughout fifteen of the islands of the Philippine Archipelago, 102 in the United States proper, 8 in Alaska, 8 in Cuba, 4 in Porto Rico, and 1 in Hawaii; but notwithstanding this extensive distribution of military force I have the satisfaction to report that the troops, wherever they were, have been found and regularly paid by a fully occupied force of paymasters.

I wish again to call the attention of the Secretary to the excellent work performed by the officers of the Department. Since the breaking up of the insurrectionary army in the Philippines our troops have been widely scattered throughout the islands in small garrisons, which has more than doubled the amount of work for the paymasters in paying them. Notwithstanding this, and the fact that the limited number of officers in the Department prevented any increase of force, the troops have been regularly paid. The number of independent detached posts paid in the Philippines is, as above stated, 420, and the means of communication between them most primitive and dangerous. Three officers have broken down in health during the season, but all have been or will be returned to duty very soon. There has been neither remonstrance nor complaint from any officer in the Department from Cuba, Porto Rico, or the Philippines, but all alike have cheerfully, intelligently, and faithfully performed the duty assigned to them.

Attention is invited to the exhibits which are appended, showing in detail the accounts with the several appropriations and the receipts and expenditures of the individual officers of the Pay Department.

Very respectfully,

A. E. Bates,
*Paymaster-General, United States Army.*

The Secretary of War.

*Statement showing the number of pay trips made, number of days consumed in travel, posts paid, and amount of field and office disbursements made by each disbursing officer of the Pay Department, United States Army, during the fiscal year ending June 30, 1900.*

| Rank and name. | Number of pay trips. | Days consumed. | Number of posts paid. | Miles traveled. | | | | | | Payments. | | | Mileage paid to paymasters. | Mileage paid to paymasters' clerks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Ambulance. | Stage. | Railroad. | Steamer. | Other conveyance. | Total. | In field. | In office. | Total. | | |
| *Colonels and assistant paymasters-general.* | | | | | | | | | | | | | | |
| Coxe, F. M | | | 1 | | | | | | | | $722,185.23 | $722,185.23 | | |
| Wilson, C. I | 1 | 3 | 2 | | | 858 | | | 858 | $9,480.80 | 684,905.07 | 694,385.87 | $60.06 | $56.38 |
| *Lieutenant-colonels and deputy paymasters-general.* | | | | | | | | | | | | | | |
| Towar, A. S | | | | | | | 7,674 | | 7,674 | 8,287.65 | 207,960.98 | 216,248.63 | | |
| Sniffen, C. C | | | | | | | | | | | | | | |
| Baird, G. W | | | | | | | | | | | 3,611,881.45 | 3,611,881.45 | | |
| *Majors and paymasters.* | | | | | | | | | | | | | | |
| Dodge, F. S | 4 | 4 | 1 | 16 | | | | | 16 | 35,671.79 | 326,055.59 | 361,727.38 | | |
| McClure, Chas | 3 | 3 | 5 | 8 | | 298 | [1]7,710 | 6 | 8,022 | 18,208.46 | 228,448.49 | 246,656.95 | 201.31 | 196.61 |
| Whipple, C. H | 6 | 17 | 56 | 278 | | 760 | 259 | 28 | 1,325 | 148,151.12 | 355,398.86 | 503,549.98 | 82.01 | 60.41 |
| Comegys, W. H | 7 | 71 | 83 | 101 | | 1,774 | [1]8,596 | | 10,471 | 283,670.69 | 349,837.14 | 633,507.83 | 90.64 | 354.18 |
| Tucker, W. F | 11 | 16 | 27 | | | 3,292 | | | 3,292 | 82,343.43 | 421,014.79 | 503,358.22 | 230.44 | 220.68 |
| Muhlenberg, J. C | 6 | 19 | 85 | 24 | | 2,077 | 583 | | 2,684 | 129,678.62 | 541,747.66 | 671,426.28 | 183.44 | 156.22 |
| Smith, G. R | 41 | 52 | 105 | | | 3,631 | 358 | | 3,989 | 317,779.72 | 1,136,378.91 | 1,454,158.63 | 274.43 | 239.53 |
| Baker, J. P | 12 | 17 | 71 | 12 | | 384 | | | 396 | 87,384.25 | 496,478.90 | 583,563.15 | 26.88 | 18.44 |
| Halford, E. W | | 45 | 133 | 33 | | 8,922 | 708 | 89 | 9,752 | 114,207.72 | 406,148.76 | 520,356.48 | 490.14 | 392.05 |
| Hamner, W. H.[2] | | | | | | | | | | 237,667.65 | | 237,667.65 | | |
| Kilbourne, C. E | 19 | 49 | 37 | 68 | | 198 | [1]7,374 | 36 | 7,676 | 118,734.99 | 137,959.28 | 256,694.27 | 68.25 | 20.04 |
| Bullis, J. L | 5 | 13 | 101 | 190 | | 1,004 | | 12 | 1,206 | 13,152.66 | 473,933.53 | 487,086.19 | 71.12 | 78.29 |
| Rogers, H. L | 19 | 19 | 23 | 49 | | 1,545 | 2,263 | 24 | 3,881 | 120,704.04 | 207,330.32 | 328,034.36 | 170.02 | 216.68 |
| Watrous, J. A | 40 | 44 | 163 | 82 | | 2,200 | 456 | 528 | 3,266 | 333,909.81 | 355,601.80 | 689,511.61 | 195.06 | 159.39 |
| Gilbert, W. W | | | | | | | [1]7,674 | | 7,674 | 533,703.95 | | 533,703.95 | | |
| Rees, H. L | 21 | 90 | 92 | 209 | | 737 | [1]8,570 | 536 | 10,052 | 893,034.08 | 216,481.77 | 1,109,515.80 | 65.80 | 94.28 |
| Vinson, W | 9 | 34 | 43 | 43 | | 1,791 | 1,325 | 40 | 3,199 | 147,807.13 | 199,036.86 | 346,843.99 | 219.06 | 194.19 |
| Newbold, Chas | 12 | 15 | 74 | 64 | | 1,312 | | | 1,376 | 173,785.45 | 228,179.24 | 401,964.69 | 90.40 | 78.30 |
| Wallace, H. S | 7 | 39 | 35 | 32 | | 1,260 | 1,173 | | 2,465 | 126,437.03 | 170,960.16 | 297,397.19 | 171.05 | 151.26 |
| Payson, F. L | 1 | 17 | 7 | 100 | | | [1]8,176 | | 8,276 | 48,893.28 | 5,512.61 | 54,405.89 | 16.60 | 24.08 |
| *Majors and additional paymasters.* | | | | | | | | | | | | | | |
| Gambrill, W. G | 12 | 87 | | 148 | | 494 | 2,387 | 333 | 3,362 | 893,058.30 | 262,136.90 | 1,155,195.20 | 24.59 | 134.08 |
| Downey, G. F | | | | | | | [1]7,674 | | 7,674 | 1,017,910.90 | | 1,017,910.90 | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Keleher, T. D.[3] | | | | | | | | | | | | | |
| Fishback, G. W.[4] | | | | | | | | | | 460,494.38 | | 460,494.38 | | |
| Ray, B. B | 29 | 47 | 32 | 274 | | 288 | 188 | | 750 | 853,123.19 | 220,890.91 | 1,074,014.10 | 40.56 | 38.06 |
| Rochester, W. B., jr | 8 | 142 | 94 | 475 | | 418 | 4,602 | 82 | 5,577 | 1,115,080.69 | 391,059.61 | 1,506,140.30 | 128.89 | 189.60 |
| Holloway, G. T | | | | | | | | | | 935,508.09 | | 935,508.09 | | |
| Smith, R. S | | | | | | | | | | 531,950.69 | | 531,950.69 | | |
| Lord, H. M | 5 | 10 | 15 | 60 | | 215 | 1,956 | 143 | 2,374 | 1,599,138.26 | 114,734.90 | 1,713,873.16 | | |
| Howell, S | 19 | 77 | 81 | 584 | 20 | 3,810 | [1]9,576 | 166 | 14,156 | 933,202.41 | 71,936.23 | 1,005,138.64 | 295.10 | 549.38 |
| Schofield, W. B | 8 | 123 | 61 | 143 | | 277 | 3,601 | 459 | 4,480 | 811,178.49 | 694,807.20 | 1,505,985.69 | 182.31 | 228.08 |
| Houston, J. B | 25 | 40 | 67 | | | 1,820 | 14 | | 1,834 | 239,835.72 | 162,538.91 | 402,374.63 | 128.24 | 199.84 |
| Pickett, G. E | 17 | 24 | 30 | 45 | | 4,958 | [1]13,598 | 50 | 18,651 | 356,478.42 | 133,850.65 | 490,329.07 | 376.15 | 905.35 |
| Dawes, J. W | 31 | 66 | 51 | 90 | | 2,887 | 12 | | 2,989 | 546,268.61 | 170,031.38 | 716,299.99 | | 239.75 |
| Canby, James | 25 | 117 | 60 | 126 | | 620 | 5,135 | 173 | 6,054 | 821,194.22 | 291,817.58 | 1,113,011.80 | | 180.50 |
| Becker, Otto | 27 | 91 | 68 | 52 | | 3,344 | 1,116 | | 4,512 | 330,315.18 | 217,289.88 | 547,605.06 | 297.48 | 233.22 |
| Monaghan, William | 13 | 124 | 66 | 450 | | 4,147 | [1]9,534 | 64 | 14,195 | 979,398.45 | 87,252.16 | 1,066,650.61 | 305.99 | 548.28 |
| Curry, M. B | 29 | 70 | 78 | 912 | | 1,599 | [1]7,758 | | 10,269 | 875,901.81 | 64,698.80 | 940,600.61 | 94.14 | 103.80 |
| Wilkins, J. S | | | | | | | [1]7,674 | | 7,674 | 414,010.09 | | 414,010.09 | | |
| Sheary, M. F.[5] | | | | | | | [1]7,674 | | 7,674 | 288,813.17 | | 288,813.17 | | |
| Coffin, Eugene | 7 | 200 | 21 | 480 | | 19 | 3,517 | | 4,016 | 728,695.21 | 402,462.04 | 1,131,157.25 | 54.18 | 160.64 |
| Varney, T. P | 25 | 76 | 28 | 90 | | 1,162 | 1,792 | | 3,044 | 289,345.81 | 125,127.03 | 414,472.84 | 187.09 | 206.50 |
| Lynch, J. R | 5 | 23 | 54 | 135 | | 296 | | | 431 | 222,380.45 | 207,161.36 | 429,541.81 | 55.32 | 130.11 |
| Goodman, T. C | 12 | 35 | 218 | | | 3,997 | 3,600 | | 7,597 | 112,216.50 | 417,712.97 | 529,929.47 | 241.79 | 227.93 |
| Graham, W. R | 7 | 83 | 23 | 45 | | 430 | [1]8,593 | 256 | 9,324 | 248,005.02 | 26,969.60 | 274,974.62 | 95.60 | 92.59 |
| Sternberg, Theo | | | | | | | | | | 1,347,127.75 | | 1,347,127.75 | | |
| Sanders, J. G | 16 | 53 | 112 | 6 | 39 | 3,136 | 1,840 | 180 | 5,201 | 153,718.27 | 492,102.40 | 645,820.67 | 250.44 | 257.13 |
| Stanton, C. E | | | | | | | | | | 1,423,303.88 | | 1,423,303.88 | | |
| Arthur, G. G | | | | | | | [1]7,374 | | 7,374 | 407,236.80 | | 407,236.80 | | |
| Stevens, P. C | 20 | 101 | 105 | 1,471 | | 781 | 2,112 | | 4,364 | 453,216.83 | 116,134.61 | 569,351.44 | 229.76 | 223.35 |
| Belknap, H. R | 15 | 52 | 26 | 32 | | 1,753 | 793 | 6 | 2,584 | 202,928.89 | 120,279.00 | 323,207.89 | 178.97 | 163.80 |
| Slaughter, B. D | 14 | 17 | 49 | | | 1,018 | | | 1,018 | 79,040.15 | 323,049.42 | 402,089.57 | 66.01 | 43.15 |
| *Acting paymasters.* | | | | | | | | | | | | | | |
| Ray, P. H | | | | | | | | | | 39,653.94 | | 39,653.94 | | |
| Glenn, E. F | | | | | | | | | | 700.00 | | 700.00 | | |
| McManus, G. H | | | | | | | | | | 852.00 | | 852.00 | | |
| Hickey, J. B | | | | | | | | | | 82,725.00 | | 82,725.00 | | |
| Total | 593 | 2,235 | 2,483 | 6,927 | 59 | 69,512 | 175,019 | 3,211 | 254,728 | 23,776,701.84 | 16,597,480.94 | 40,374,182.78 | 5,939.32 | 7,766.15 |

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[1] This amount includes travel on change of station to and from Manila.

[2] Retired January 18, 1900.

[3] Chief disbursing officer, office provost-marshal-general, Manila, P. I.

[4] Mustered out February 15, 1900.

[5] Mustered out October 31, 1899.

*Statement showing the balance in the hands of each disbursing officer of the Pay Department, United States Army, on the 1st of July, 1899; the amount remitted to each from the United States Treasury or turned over by other agents during the fiscal year ending June 30, 1900; the amounts accounted for by accounts and vouchers of expenditures or by transfer or replacement in the Treasury, and the balance remaining in the hands of paymasters to be accounted for in the next fiscal year.*

| Rank and name. | Balance in hands of each paymaster on June 30, 1899. | Remitted from the Treasury in the year ending June 30, 1900. | Received from other paymasters. | Received from soldiers' deposits. | Received from paymaster's collections. | Total received and to be accounted for. | Surplus funds deposited in the Treasury. | Paymaster's collections deposited in the Treasury. | Expenditures. | Transferred to other paymasters. | Balance in hands of each paymaster on June 30, 1900. | Total accounted for. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Colonels and assistant paymasters-general.* | | | | | | | | | | | | |
| Coxe, F. M | $335,118.86 | $11,735,500.00 | $1,429,205.18 | $9,568.45 | $3,601.83 | $13,512,994.32 | $597,325.86 | $3,601.83 | $722,185.23 | $12,096,949.43 | $92,931.97 | $13,512,994.32 |
| Wilson, C. I | 354,525.25 | 4,609,000.00 | 519,572.89 | 9,573.42 | 3,175.45 | 5,495,847.01 | 242,584.60 | 3,175.45 | 694,385.87 | 4,527,451.65 | 28,249.44 | 5,495,847.01 |
| *Lieutenant-colonels and deputy paymasters-general.* | | | | | | | | | | | | |
| Towar, A. S | 73,329.21 | 281,000.00 | 9,500,912.61 | 21,251.75 | 3,808.85 | 9,880,302.42 | 237,577.42 | 3,808.85 | 216,248.63 | 8,417,784.23 | 1,004,883.29 | 9,880,302.42 |
| Sniffen, C. C.[1] | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| Baird, G. W | 517,934.21 | 10,348,719.22 | 3,645,641.46 | 1,799.17 | 15,431.98 | 14,529,526.04 | 258,804.44 | 15,431.98 | 3,611,881.45 | 9,266,058.42 | 1,377,349.75 | 14,529,526.04 |
| *Majors and paymasters.* | | | | | | | | | | | | |
| Dodge, F. S.[2] | 448,592.65 | 1,011,000.00 | 1,743,426.24 | 6,264.51 | 5,862.54 | 3,215,145.94 | 544,631.15 | 5,862.54 | 361,727.38 | 2,219,110.60 | 83,814.27 | 3,215,145.94 |
| McClure, Chas | 2,215,511.14 | 1,050,000.00 | 2,410,823.17 | 14,321.35 | 3,125.49 | 5,693,781.15 | 865,049.50 | 3,125.49 | 246,656.95 | 4,578,949.21 | ........ | 5,693,781.15 |
| Whipple, C. H | 89,585.54 | 383,000.00 | 613,453.06 | 20,513.71 | 10,627.16 | 1,117,179.47 | 418.67 | 10,627.16 | 503,549.98 | 548,518.20 | 54,065.46 | 1,117,179.47 |
| Comegys, W. H | 85,277.82 | 270,000.00 | 1,688,006.82 | 58,812.80 | 15,633.48 | 2,117,730.92 | 19,193.41 | 15,633.48 | 633,507.83 | 1,367,886.83 | 81,509.37 | 2,117,730.92 |
| Tucker, W. F | 187,199.74 | 651,500.00 | 462,000.00 | 13,608.35 | 5,376.50 | 1,319,684.59 | 64,007.10 | 5,376.50 | 503,358.22 | 582,353.51 | 164,589.26 | 1,319,684.59 |
| Muhlenberg, J. C | ........ | 100,000.00 | 958,647.92 | 16,118.62 | 11,521.78 | 1,086,288.32 | 4,738.97 | 11,521.78 | 671,426.28 | 327,295.48 | 71,305.81 | 1,086,288.32 |
| Smith, G. R | 183,425.14 | 654,000.00 | 1,273,629.17 | 17,269.35 | 14,034.07 | 2,142,357.73 | 899.44 | 14,034.07 | 1,454,158.63 | 607,792.63 | 65,472.96 | 2,142,357.73 |
| Baker, J. P | 107,593.18 | 545,000.00 | 160,696.20 | 17,917.18 | 15,337.52 | 846,544.08 | 104,750.62 | 15,337.52 | 583,863.15 | 65,516.04 | 77,076.75 | 846,544.08 |
| Halford, E. W | 415,005.30 | 340,000.00 | 391,632.58 | 23,967.67 | 10,410.22 | 1,181,015.77 | 299,000.00 | 10,410.22 | 520,356.48 | 297,774.55 | 53,474.52 | 1,181,015.77 |
| Hamner, W. H | 36,640.86 | 352,000.00 | 90,601.78 | 6,048.99 | 4,788.49 | 490,080.12 | 17,091.29 | 4,788.49 | 237,667.65 | 230,532.69 | ........ | 490,080.12 |
| Kilbourne, C. E | ........ | ........ | 285,000.00 | 13,185.43 | 4,783.83 | 302,969.26 | ........ | 4,783.83 | 256,694.27 | ........ | 41,491.16 | 302,969.26 |
| Bullis, J. L | 62,410.24 | 235,000.00 | 265,500.00 | 17,772.67 | 18,198.21 | 598,881.12 | 66,573.82 | 18,198.21 | 487,086.19 | 8,108.81 | 18,914.09 | 598,881.12 |
| Rogers, H. L | 905,156.64 | 1,025,000.00 | 1,519,045.35 | 7,623.62 | 6,517.85 | 3,463,343.46 | ........ | 6,517.85 | 328,034.36 | 2,846,133.60 | 282,657.65 | 3,463,343.46 |
| Watrous, J. A | 62,560.67 | 320,000.00 | 337,282.60 | 23,055.93 | 18,252.43 | 761,151.63 | 37,007.82 | 18,252.43 | 689,511.61 | 16,379.77 | ........ | 761,151.63 |
| Gilbert, W. W | 15.00 | ........ | 617,445.58 | 35,158.68 | 9,918.51 | 662,532.77 | ........ | 9,918.51 | 533,703.95 | 61,517.25 | 57,398.06 | 662,532.77 |
| Vinson, Webster | 27,185.48 | ........ | 3,596,725.00 | 11,052.96 | 8,278.10 | 3,643,236.54 | ........ | 8,278.10 | 346,843.99 | 3,240,836.37 | 47,283.08 | 3,643,236.54 |
| Rees, H. L | 24,100.11 | ........ | 2,321,404.50 | 117,326.80 | 32,206.27 | 2,495,037.68 | ........ | 32,206.27 | 1,109,515.80 | 1,280,883.44 | 72,432.17 | 2,495,037.68 |
| Newbold, Chas | 50,804.47 | 355,000.00 | 139,814.53 | 18,381.33 | 12,217.12 | 576,217.45 | 65,411.77 | 12,217.12 | 401,964.69 | 46,749.50 | 49,874.37 | 576,217.45 |
| Wallace, H. S | 45,152.85 | ........ | 350,514.28 | 7,849.20 | 9,197.04 | 412,713.37 | 4.46 | 9,197.04 | 297,397.19 | 49,377.59 | 56,787.09 | 412,713.37 |
| Payson, F. L | ........ | ........ | 80,500.00 | 9,799.40 | 1,163.18 | 91,462.58 | ........ | 1,163.18 | 54,405.89 | ........ | 35,893.51 | 91,462.58 |

| *Majors and additional paymasters.* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Gambrill, W. G | 65,750.43 | 110,000.00 | 1,471,885.41 | 194,069.40 | 35,720.93 | 1,877,426.17 | ........ | 35,720.93 | 1,155,195.20 | 404,046.68 | 282,463.36 | 1,877,426.17 |
| Downey, G. F | 55,534.21 | 100,000.00 | 2,193,862.86 | 153,710.00 | 38,335.22 | 2,541,442.29 | ........ | 38,335.22 | 1,017,910.90 | 1,429,748.91 | 55,447.26 | 2,541,442.29 |
| Keleher, T. D | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| Fishback, G. W | 17,832.86 | ........ | 660,950.11 | 7,023.40 | 5,581.22 | 691,387.59 | 75,077.76 | 5,581.22 | 460,494.38 | 150,234.23 | ........ | 691,387.59 |
| Ray, B. B | ........ | ........ | 1,155,975.61 | 20,655.73 | 12,164.21 | 1,188,795.55 | ........ | 12,164.21 | 1,074,014.10 | 60,814.72 | 41,802.52 | 1,188,795.55 |
| Rochester, W. B., jr | 21,096.27 | 180,000.00 | 1,596,243.93 | 253,494.68 | 45,877.94 | 2,096,712.82 | ........ | 45,877.94 | 1,506,140.30 | 490,814.61 | 53,879.97 | 2,096,712.82 |
| Holloway, G. T | 7,028.49 | 140,000.00 | 765,216.65 | 166,718.83 | 29,469.88 | 1,108,433.85 | ........ | 29,469.88 | 935,508.09 | 143,455.88 | ........ | 1,108,433.85 |
| Smith, R. S | 83,593.03 | 368,000.00 | 251,098.85 | 38,568.64 | 21,857.11 | 763,117.63 | 12,235.98 | 21,857.11 | 531,950.69 | 152,841.37 | 44,232.48 | 763,117.63 |
| Lord, H. M | 1,798,975.00 | 130,000.00 | 1,002,002.69 | 12,187.20 | 7,076.64 | 2,950,241.53 | 31,272.49 | 7,076.64 | 1,713,873.16 | 1,063,356.98 | 134,662.26 | 2,950,241.53 |
| Howell, Seymour | 41,941.12 | 200,000.00 | 2,130,206.08 | 127,787.05 | 23,909.84 | 2,523,844.09 | ........ | 23,909.84 | 1,005,138.64 | 1,447,189.72 | 47,605.89 | 2,523,844.09 |
| Schofield, W. B | 24,080.37 | 190,000.00 | 1,315,582.40 | 217,617.91 | 38,133.66 | 1,785,414.34 | ........ | 38,133.66 | 1,505,985.69 | 187,271.66 | 54,023.33 | 1,785,414.34 |
| Houston, J. B | 81,288.38 | 453,000.00 | 323,862.18 | 26,642.87 | 19,066.85 | 903,860.28 | 30,000.00 | 19,066.85 | 402,374.63 | 412,996.47 | 39,422.33 | 903,860.28 |
| Pickett, G. E | 53,595.80 | ........ | 1,884,931.47 | 15,057.20 | 5,970.92 | 1,959,555.39 | ........ | 5,970.92 | 490,329.07 | 1,417,147.31 | 46,108.09 | 1,959,555.39 |
| Dawes, J. W | 44,969.79 | 62,000.00 | 697,903.16 | 45,273.46 | 35,272.74 | 885,419.15 | ........ | 35,272.74 | 716,299.99 | 124,106.36 | 9,740.06 | 885,419.15 |
| Canby, James | 8,402.13 | 160,000.00 | 1,084,357.20 | 178,879.62 | 28,248.10 | 1,454,887.05 | ........ | 28,248.10 | 1,113,011.80 | 268,760.54 | 44,866.61 | 1,454,887.05 |
| Becker, Otto | 68,511.75 | 30,000.00 | 528,405.58 | 41,867.68 | 20,149.61 | 688,934.62 | ........ | 20,149.61 | 547,605.06 | 80,299.08 | 40,880.87 | 688,934.62 |
| Monaghan, Wm | ........ | ........ | 1,316,850.84 | 49,610.97 | 15,901.74 | 1,382,363.55 | ........ | 15,901.74 | 1,066,650.61 | 253,048.06 | 46,763.14 | 1,382,363.55 |
| Curry, M. B | 11,470.22 | ........ | 1,209,123.68 | 86,158.10 | 26,592.17 | 1,333,344.17 | ........ | 26,592.17 | 940,600.61 | 255,403.08 | 110,748.31 | 1,333,344.17 |
| Wilkins, J. S | 64,975.00 | ........ | 660,247.09 | 14,129.41 | 10,546.64 | 749,898.14 | 61.32 | 10,546.64 | 414,010.09 | 138,455.32 | 186,824.77 | 749,898.14 |
| Sheary, M. F | 40,687.53 | 30,000.00 | 359,910.00 | 47,748.15 | 1,681.26 | 480,026.94 | ........ | 1,681.26 | 288,813.17 | 189,532.51 | ........ | 480,026.94 |
| Coffin, Eugene | 76,070.49 | 60,000.00 | 1,225,977.66 | 158,057.42 | 25,524.05 | 1,545,629.62 | ........ | 25,524.05 | 1,131,157.25 | 161,001.59 | 227,946.73 | 1,545,629.62 |
| Varney, T. P | ........ | 63,030.97 | 349,570.00 | 59,760.87 | 13,947.51 | 486,309.35 | 993.33 | 13,947.51 | 414,472.84 | 34,907.86 | 21,987.81 | 486,309.35 |
| Lynch, J. R | 44,274.13 | 32,000.00 | 447,712.48 | 39,014.10 | 19,256.89 | 582,257.60 | 20,500.00 | 19,256.89 | 429,541.81 | 64,238.87 | 48,720.03 | 582,257.60 |
| Goodman, T. C | 40,524.82 | 307,000.00 | 1,154,682.05 | 19,297.31 | 11,336.41 | 1,532,840.59 | 25,000.00 | 11,336.41 | 529,929.47 | 326,574.71 | 640,000.00 | 1,532,840.59 |
| Graham, W. R | 38,228.69 | ........ | 521,404.08 | 41,947.10 | 12,045.97 | 613,625.84 | ........ | 12,045.97 | 274,974.62 | 259,067.57 | 67,537.68 | 613,625.84 |
| Sternberg, Theo | 76,987.12 | 255,000.00 | 1,004,162.58 | 299,661.17 | 38,577.98 | 1,674,388.85 | ........ | 38,577.98 | 1,347,127.75 | 55,528.80 | 233,154.32 | 1,674,388.85 |
| Sanders, J. G | 23,463.65 | 324,000.00 | 385,718.82 | 46,287.54 | 17,416.41 | 796,886.42 | 1,141.54 | 17,416.41 | 645,820.67 | 84,956.02 | 47,551.78 | 796,886.42 |
| Stanton, C. E | 93,231.63 | 70,000.00 | 1,430,070.00 | 234,663.13 | 41,634.39 | 1,869,599.15 | ........ | 41,634.39 | 1,423,303.88 | 164,231.93 | 240,428.95 | 1,869,599.15 |
| Arthur, G. G | 50,000.00 | 100,000.00 | 466,648.87 | 50,580.77 | 14,374.69 | 681,604.33 | ........ | 14,374.69 | 407,236.80 | 219,789.81 | 40,203.03 | 681,604.33 |
| Stevens, P. C | 86,891.30 | 200,000.00 | 509,963.61 | 36,479.10 | 15,945.25 | 849,279.26 | 3,956.44 | 15,945.25 | 569,351.44 | 214,462.61 | 45,563.52 | 849,279.26 |
| Belknap, H. R | 42,056.36 | ........ | 389,838.22 | 4,171.96 | 10,005.58 | 446,072.12 | ........ | 10,005.58 | 323,207.89 | 79,884.18 | 32,974.47 | 446,072.12 |
| Slaughter, B. D | 34,791.05 | 106,000.00 | 412,912.45 | 21,715.38 | 14,180.95 | 589,599.83 | ........ | 14,180.95 | 402,089.57 | 143,590.29 | 29,739.02 | 589,599.83 |
| *Acting paymasters.* | | | | | | | | | | | | |
| Ray, P. H.[3] | 100,000.00 | ........ | 100,485.00 | 8,365.42 | 1,126.02 | 209,976.44 | ........ | ........ | 39,653.94 | 100,000.00 | 70,322.50 | 209,976.44 |
| Hickey, J. B | 202,275.00 | ........ | ........ | ........ | ........ | 202,275.00 | ........ | ........ | 82,725.00 | 119,550.00 | ........ | 202,275.00 |
| McManus, G. H | 31,156.48 | ........ | ........ | 101.75 | .25 | 31,258.48 | 30,406.23 | .25 | 852.00 | ........ | ........ | 31,258.48 |
| Glenn, E. F | ........ | ........ | 700.00 | ........ | ........ | 700.00 | ........ | ........ | 700.00 | ........ | ........ | 700.00 |
| Moses, G. W | 28,675.00 | ........ | ........ | ........ | ........ | 28,675.00 | ........ | ........ | ........ | 28,675.00 | ........ | 28,675.00 |

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[1] On special duty.

[2] $205 lost funds still charged under bond of January 24, 1896, pending relief by Congress.

[3] From August 1, 1899, to June 30, 1900, the sum of $1,126.02 was received, as paymasters' collections, by Maj. P. H. Ray, Eighth Infantry, acting paymaster, United States Army, at Fort Egbert, Alaska. This sum he had, up to June 30, 1900, failed to deposit to credit of the Treasurer United States, as required by Pay Department regulations. It is accordingly added to his balance to be accounted for in fiscal year 1901, and he has been instructed to make proper deposit thereof without further delay.

*Statement showing the balance in the hands of each disbursing officer of the Pay Department, United States Army, on the 1st of July, 1899, etc.*—Cont'd.

| Rank and name. | Balance in hands of each paymaster on June 30, 1899. | Remitted from the Treasury in the year ending June 30, 1900. | Received from other paymasters. | Received from soldiers' deposits. | Received from paymaster's collections. | Total received and to be accounted for. | Surplus funds deposited in the Treasury. | Paymaster's collections deposited in the Treasury. | Expenditures. | Transferred to other paymasters. | Balance in hands of each paymaster on June 30, 1900. | Total accounted for. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Majors and late additional paymasters.* | | | | | | | | | | | | |
| Hartzell, Ralph[1] | $40.00 | | | | | $40.00 | | | | | $40.00 | $40.00 |
| Havens, B. F.[2] | 615.00 | | | | | 615.00 | | | | | 615.00 | 615.00 |
| Krause, J. C.[3] | 988.98 | | | | | 988.98 | | | | | 988.98 | 988.98 |
| Total | 9,682,126.44 | $37,935,750.19 | $63,409,942.53 | $3,215,544.66 | $900,386.93 | 115,143,750.75 | $3,655,715.43 | $889,260.91 | $40,374,182.78 | $63,409,942.53 | 6,804,649.10 | 115,143,750.75 |

[1] $40 balance unaccounted for awaiting adjustment by Auditor for War Department.

[2] $615 balance unaccounted for awaiting adjustment by Auditor for War Department.

[3] $988.98 balance unaccounted for awaiting adjustment by Auditor for War Department.

*Statement, by appropriations, of approved and suspended disbursements in paymasters' accounts during the fiscal year ending June 30, 1900, showing also balance of suspensions remaining June 30, 1899, removed during the fiscal year, and the balance remaining June 30, 1900.*

| Title of appropriations. | Disbursements. | | | Suspensions. | | | |
|---|---|---|---|---|---|---|---|
| | Total. | Approved. | Suspended. | Amount of suspensions on books June 30, 1899. | Total suspensions. | Amount of suspensions removed during fiscal year ending June 30, 1900. | Amount of suspensions remaining on books June 30, 1900. |
| Pay, etc., of the Army, 1900 | $32,791,363.42 | $32,543,968.97 | $247,394.45 | | $247,394.45 | $203,131.01 | $44,263.44 |
| Pay, etc., of the Army, 1899 | 3,274,675.71 | 3,268,842.72 | 5,832.99 | $93,523.96 | 99,356.95 | 80,494.43 | 18,862.52 |
| Pay, etc., of the Army, January 1, 1899 | 449,996.65 | 449,696.18 | 300.47 | 87,773.57 | 88,074.04 | 77,025.33 | 11,048.71 |
| Pay, etc., of the Army, 1898 | 10,172.99 | 10,172.99 | | 1,769.50 | 1,769.50 | 1,612.38 | 157.12 |
| Pay, etc., of the Army, 1897 and prior years | 286.70 | 286.70 | | 6,564.58 | 6,564.58 | 16.53 | 6,548.05 |
| Pay, etc., of the Army, certified claims | 7,440.81 | 7,440.81 | | | | | |
| Pay of Military Academy, 1900 | 296,820.12 | 296,803.40 | 16.72 | | 16.72 | 14.32 | 2.40 |
| Pay of Military Academy, 1899 | 25,625.28 | 25,625.28 | | 6.08 | 6.08 | 6.08 | |
| Mileage to officers traveling without troops, 1900 | 321,271.99 | 318,011.00 | 3,260.99 | | 3,260.99 | 1,000.22 | 2,260.77 |
| Mileage to officers traveling without troops, 1899 | 26,334.92 | 26,110.44 | 224.48 | 3,167.86 | 3,392.34 | 2,666.65 | 725.69 |
| Mileage to officers traveling without troops, January 1, 1899 | 2,363.86 | 2,363.86 | | 871.46 | 871.46 | 838.84 | 32.62 |
| Mileage to officers traveling without troops, 1898 | 304.72 | 304.72 | | | | | |
| Extra pay to volunteers, war with Spain | 1,026,890.19 | 1,023,601.14 | 3,289.05 | 6,420.65 | 9,709.70 | 5,451.65 | 4,258.05 |
| Extra pay to Regular Army, war with Spain | 246,662.50 | 246,034.90 | 627.60 | 1,330.43 | 1,958.03 | 418.80 | 1,539.23 |
| Bounty to Fifteenth and Sixteenth Missouri Cavalry Volunteers | 137.56 | 137.56 | | | | | |
| Extra pay to officers and men who served in Mexican war | 21.00 | 21.00 | | | | | |
| Commutation of rations to prisoners of war in rebel States and to soldiers on furlough, certified claims, 1899 | 124.14 | 124.14 | | | | | |
| Commutation of rations to prisoners of war in rebel States and to soldiers on furlough, certified claims, 1898 | 55.75 | 55.75 | | | | | |
| Arrears of pay, bounty, etc., certified claims, 1900 | 226,525.80 | 226,525.30 | | | | | |
| Traveling expenses of California and Nevada volunteers, certified claims | 187.21 | 187.21 | | | | | |
| Pay of volunteers, certified claims | 42.90 | 42.90 | | | | | |
| Pay, transportation, service, and supplies of Oregon and Washington volunteers, 1855–56, certified claims | 20.61 | 20.61 | | | | | |
| Pay of two and three year volunteers, certified claims, 1899 | 15,256.07 | 15,256.07 | | | | | |
| Pay of two and three year volunteers, certified claims | 181.37 | 181.37 | | | | | |
| Bounty to volunteers, their widows and legal heirs, certified claims, 1899 | 7,307.44 | 7,307.44 | | | | | |
| Bounty to volunteers, their widows and legal heirs, certified claims | 385.00 | 385.00 | | | | | |
| Bounty under act of July 28, 1866, certified claims, 1899 | 1,078.57 | 1,078.57 | | | | | |
| Emergency fund, War Department, "to disband the Cuban army" | 1,642,650.00 | 1,642,575.00 | 75.00 | | 75.00 | 75.00 | |
| National Defense (war) | | | | 1,272.22 | 1,272.22 | 517.67 | 754.55 |
| Total | 40,874,182.78 | 40,118,161.03 | 261,021.75 | 202,700.31 | 463,722.06 | 373,268.91 | 90,453.15 |

*Statement of the account of the Pay Department, United States Army, with the*

| Appropriations. | In account with the Treasury. | | | | | |
|---|---|---|---|---|---|---|
| | Balance in the Treasury July 1, 1899. | Amount of appropriations and transfer of warrants. | Unexpended balances deposited. | Paymasters' collections deposited. | Repayments in settlement of accounts. | Total. |
| Pay, etc., of the Army, 1900 | | $43,625,819.60 | $295.65 | $394,317.87 | $635.00 | $44,021,068.12 |
| Pay of Military Academy, 1900 | | 349,097.07 | | 114.60 | | 349,211.67 |
| Mileage to officers traveling without troops, 1900 | | 701,128.61 | | 1,022.41 | | 702,151.02 |
| Pay, etc., of the Army, 1899 | $452,433.21 | 620,261.55 | 1,992,099.17 | 263,256.79 | 2,243.16 | 3,330,293.88 |
| Pay of Military Academy, 1899 | 44,764.50 | | 493.33 | 373.21 | | 45,631.04 |
| Mileage to officers traveling without troops, 1899 | 221,369.80 | 1,399.70 | 50,577.20 | 5,165.88 | 109.29 | 278,621.87 |
| Pay, etc., of the Army, Jan. 1, 1899 | 3,979,858.00 | 1,098,048.59 | 1,057,305.96 | 27,792.41 | 1,946.46 | 6,164,951.42 |
| Mileage to officers traveling without troops, Jan. 1, 1899 | 11,548.90 | 1,147.73 | 49.50 | 5,464.30 | 22.94 | 18,233.37 |
| Pay, etc., of the Army, 1898 | 32,062.12 | 13,065.27 | 158.543.37 | 615.62 | 40.75 | 204,327.13 |
| Pay of Military Academy, 1898 | 8,197.30 | | | | | 8,197.30 |
| Mileage to officers traveling without troops, 1898 | 832.86 | | | 462.44 | | 1,295.30 |
| Pay, etc., of the Army, 1897 and prior years | | | | 274.11 | 72.00 | 346.11 |
| Mileage to officers traveling without troops, 1897 and prior years | | | | 228.04 | 2.00 | 230.04 |
| Pay, etc., of the Army, 1897 | 19,128.87 | | 713.30 | | | 19,842.17 |
| Pay of two and three year volunteers, 1871 and prior years | | 142.63 | | | 689.85 | 832.48 |
| Extra pay to volunteers, war with Spain | | 915,864.02 | 5,075.14 | 233.00 | 40.56 | 921,212.72 |
| Extra pay to Regular Army, war with Spain | | 25,766.95 | 12,356.60 | | | 38,123.55 |
| Bounty to Fifteenth and Sixteenth Missouri Cavalry Volunteers | | 137.56 | | | | 137.56 |
| Extra pay to officers and men who served in Mexican war | | | | | | |
| Three months' pay proper | | | | | | |
| Bounty under act of July 28, 1866, indefinite | | | | | 1,160.00 | 1,160.00 |
| CERTIFIED CLAIMS. | | | | | | |
| Pay, etc., of the Army | | 8,671.16 | | | | 8,671.16 |
| Arrears of pay, bounty, etc., 1900 | | 450,000.00 | | 8.40 | 115.55 | 450,123.95 |
| Pay of two and three year volunteers | 7,531.90 | 381.51 | | | | 7,913.41 |
| Pay of two and three year volunteers, 1897 | 25,455.47 | | | | | 25,455.47 |
| Pay of two and three year volunteers, 1898 | 64,825.72 | | 5,106.24 | | | 69,931.96 |
| Pay of two and three year volunteers, 1899 | 145,000.00 | | 10,380.45 | 6.97 | 45.19 | 155,432.61 |
| Bounty to volunteers, their widows and legal heirs | 19,821.71 | 421.67 | | | | 20,243.38 |
| Bounty to volunteers, their widows and legal heirs, 1897 and prior years | | 10.00 | | | 10.00 | 20.00 |
| Bounty to volunteers, their widows and legal heirs, 1898 | 34,000.00 | 100.00 | 4,911.85 | | | 39,011.85 |
| Bounty to volunteers, their widows and legal heirs, 1899 | 60,000.00 | | 11,101.82 | | 103.50 | 71,205.32 |
| Bounty under act of July 11, 1862 | | 100.00 | | | | 100.00 |
| Bounty under act of July 28, 1866 | 2,590.35 | 345.00 | 1,321.66 | | | 4,257.01 |
| Bounty under act of July 28, 1866, 1898 | 1,000.00 | | 1,173.57 | | | 2,173.57 |
| Bounty under act of July 28, 1866, 1899 | | | 5,270.84 | | | 5,270.84 |
| Pay of volunteers | | 141.56 | | | | 141.56 |
| Pay, transportation, services, and supplies of Oregon and Washington volunteers in 1855, 1856 | | 20.61 | | | | 20.61 |
| Traveling expenses of California and Nevada volunteers | | | 496.98 | | | 496.98 |
| Commutation of rations to prisoners of war, etc., 1898 | | | 811.31 | | | 811.31 |
| Commutation of rations to prisoners of war, etc., 1899 | 996.00 | 120.68 | | | | 1,116.68 |

*appropriations subject to its control during the fiscal year ending June 30, 1900.*

| In account with the Treasury. | | | | | Balance in the hands of paymasters June 30, 1900. | Total balances June 30, 1900. |
|---|---|---|---|---|---|---|
| Amount drawn by requisition. | | Amount covered into surplus fund. | Total. | Balance in the Treasury June 30, 1900. | | |
| On Pay Department request. | On Treasury settlements. | | | | | |
| $35,305,000.00 | $32,997.09 | .............. | $35,337,997.09 | $8,683,071.03 | $5,586,578.90 | $14,269,649.93 |
| 319,000.00 | .............. | .............. | 319,000.00 | 30,211.67 | 21,275.77 | 51,487.44 |
| 425,000.00 | 6.30 | .............. | 425,006.30 | 277,144.72 | 103,572.90 | 380,717.62 |
| 750,000.00 | 1,717,759.87 | .............. | 2,467,759.87 | 862,534.01 | 419,425.64 | 1,281,959.65 |
| 8,030.97 | 5,026.40 | .............. | 13,057.37 | 32,573.67 | 1,893.56 | 34,467.23 |
| .............. | 251,780.04 | .............. | 251,780.04 | 26,841.83 | 56,726.82 | 83,568.65 |
| 220,000.00 | 4,643,162.41 | .............. | 4,863,162.41 | 1,301,789.01 | 137,634.48 | 1,439,423.49 |
| 4,000.00 | 2,436.95 | .............. | 6,436.95 | 11,796.42 | 7,900.23 | 19,696.65 |
| .............. | 2,672.91 | $201,654.22 | 204,327.13 | .............. | 9,061.00 | 9,061.00 |
| .............. | .............. | 8,197.30 | 8,197.30 | .............. | .............. | .............. |
| 200.00 | .............. | 1,095.30 | 1,295.30 | .............. | 60.04 | 60.04 |
| .............. | .............. | 346.11 | 346.11 | .............. | .............. | .............. |
| .............. | .............. | 230.04 | 230.04 | .............. | .............. | .............. |
| 1,000.00 | .............. | 18,842.17 | 19,842.17 | .............. | .............. | .............. |
| .............. | .............. | 832.48 | 832.48 | .............. | .............. | .............. |
| 620,000.00 | 301,212.72 | .............. | 921,212.72 | .............. | 223,919.42 | 223,919.42 |
| .............. | 38,123.55 | .............. | 38,123.55 | .............. | 187,782.58 | 187,782.85 |
| 137.56 | .............. | .............. | 137.56 | .............. | .............. | .............. |
| .............. | .............. | .............. | .............. | .............. | 215.00 | 215.00 |
| .............. | .............. | .............. | .............. | .............. | 328.78 | 328.78 |
| .............. | .............. | 1,160.00 | 1,160.00 | .............. | .............. | .............. |
| 7,000.00 | 145.00 | .............. | 7,145.00 | 1,526.16 | 2,941.10 | 4,467.26 |
| 259,929.10 | 1,147.87 | .............. | 261,076.97 | 189,046.98 | 33,403.80 | 222,450.78 |
| 381.51 | .............. | .............. | 381.51 | 7,531.90 | 3,135.12 | 10,667.02 |
| .............. | .............. | 25,455.47 | 25,455.47 | .............. | .............. | .............. |
| .............. | .............. | 69,931.96 | 69,931.96 | .............. | .............. | .............. |
| 15,000.00 | 45.19 | .............. | 15,045.19 | 140,387.42 | .............. | 140,387.42 |
| 421.67 | 100.00 | .............. | 521.67 | 19,721.71 | 4,085.60 | 23,807.31 |
| .............. | .............. | 20.00 | 20.00 | .............. | .............. | .............. |
| .............. | .............. | 39,011.85 | 39,011.85 | .............. | .............. | .............. |
| .............. | 103.50 | .............. | 103.50 | 71,101.82 | .............. | 71,101.82 |
| 100.00 | .............. | .............. | 100.00 | .............. | 100.00 | 100.00 |
| 200.00 | .............. | 1,321.66 | 1,521.66 | 2,735.35 | 200.00 | 2,935.35 |
| .............. | .............. | 2,173.57 | 2,173.57 | .............. | .............. | .............. |
| .............. | .............. | .............. | .............. | 5,270.84 | .............. | 5,270.84 |
| 141.56 | .............. | .............. | 141.56 | .............. | 98.66 | 98.66 |
| 20.61 | .............. | .............. | 20.61 | .............. | .............. | .............. |
| 187.21 | .............. | .............. | 187.21 | 309.77 | .............. | 309.77 |
| .............. | 120.68 | 690.63 | 811.31 | .............. | .............. | .............. |
| .............. | .............. | .............. | .............. | 1,116.68 | 1,334.70 | 2,451.38 |

*Statement of the account of the Pay Department, United States Army, with the appro*

| Appropriations. | In account with the Treasury. | | | | | |
|---|---|---|---|---|---|---|
| | Balance in the Treasury July 1, 1899. | Amount of appropriations and transfer of warrants. | Unexpended balances deposited. | Paymasters' collections deposited. | Repayments in settlement of accounts. | Total. |
| **SPECIAL ACCOUNTS.** | | | | | | |
| Emergency fund, War Department, "to disband the Cuban army" | | | $452,250.00 | $3,000.00 | | $455,250.00 |
| National dofense (war), allotment of Apr. 16, 1898 (pay of contract surgeons) | $52.80 | | | | | 52.80 |
| National defense (war), allotments of Apr. 14, 1898, Oct. 25, 1898, Nov. 3, 1898, Dec. 13, 1898 (mileage to officers) | 36,105.96 | | | 1,542.27 | $82.18 | 37,730.41 |
| Total | 5,167,575.47 | $47,812,191.47 | 3,770,333.94 | 703,878.32 | 7,318.43 | 57,461,297.63 |

*priations subject to its control during the fiscal year ending June 30, 1900*—Continued.

| In account with the Treasury. | | | | | Balance in the hands of paymasters June 30, 1900. | Total balances June 30, 1900. |
|---|---|---|---|---|---|---|
| Amount drawn by requisition. | | Amount covered into surplus fund. | Total. | Balance in the Treasury June 30, 1900. | | |
| On Pay Department request. | On Treasury settlements. | | | | | |
| ............... | ............... | ............... | ............... | $455,250.00 | ............... | $455,250.00 |
| ............... | $52.80 | ............... | $52.80 | ............... | ............... | ............... |
| ............... | 36,708.40 | ............... | 36,708.40 | 1,022.01 | ............... | 1,022.01 |
| $37,935,750.19 | 7,033,601.68 | $370,962.76 | 45,340,314.63 | 12,120,983.00 | $6,801,674.10 | 18,922,657.10 |

# REPORT OF THE CHIEF SIGNAL OFFICER.

# REPORT

OF

# THE CHIEF SIGNAL OFFICER.

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WAR DEPARTMENT,
OFFICE OF THE CHIEF SIGNAL OFFICER,
*Washington, October 5, 1900.*

SIR: I have the honor to submit herewith my annual report covering the operations of the Signal Corps of the Army for the fiscal year ending June 30, 1900.

The labors of the Signal Corps during the past year, if not the most striking in the annals of this organization, yet certainly have covered a greater extent of territory, and have exceeded in amount of work and in variety of duties performed those in any previous year.

The operations of the Signal Corps during the Spanish-American war were extraordinary, both in respect to the augmentation of the corps and also as to the extent of duties which demanded for their successful completion remarkable energy and skill on the part of its officers and men. When the war ended it seemed logical that the size of the corps and the amount of its duties would be materially decreased; but such expectations failed of realization as regards the duties to be performed, which increased largely coincidently with the action of Congress reducing the Signal Corps to a peace establishment.

The operations of the Signal Corps have been coexistent with the operations of the Army of the United States, not in a theoretical and limited way, but on broad lines and widening activities, which have comprised practically the entire area, not only of the United States proper, but also of Alaska, Cuba, Porto Rico, the Philippines, and a portion of China.

The law of March 2, 1899, which required the discharge in a strictly limited time of the entire enlisted force of the Volunteer Signal Corps, was only carried out by persistence and zeal on the part of the officers of the Signal Corps. Fortunately, by their energies, it was completed and the extensive force of volunteers replaced by regulars without closing a single telegraph office in Porto Rico or Cuba and without withdrawing a single Signal Corps soldier from duty with troops then actively campaigning in the Philippines. It was impossible, however, until late in the autumn of 1899, to replace the Volunteer Signal Corps soldiers who stretched the flying telegraph lines up to the Filipino trenches and carried field lines with skirmishers into captured towns. Despite every effort, the Nineteenth Company of the Volunteer Signal Corps did not arrive in San Francisco until October, where it was mustered out on October 10, 1899. It was speedily followed by the Eighteenth Company of Signal Corps Volunteers, which was mustered out in San Francisco on October 25, 1899, among the latest, if not the very last, volunteer organization of the Spanish-American war to leave the service.

With the muster out of the last volunteer soldier it would seem as though a reduction of work had commenced, but in an electrical age, and in response to the demands of our active and progressive generals, there was soon developed in the American Army a system which had never before received adequate attention, of the application of electricity to war on a scale unprecedented in military history. Incessant demands were made by military commanders for intercommunication with their detached organizations by telegraph and by telephone, in addition to the former methods of heliography and other means of visual signaling.

While the military work of the other arms of the service speedily decreased with the reduction of the Army from one-quarter of a million to 100,000, yet the demands upon the Signal Corps steadily increased.

The act of March 2, 1899, would have reduced the Signal Corps to its regular strength at the commencement of the war (11 officers and 50 sergeants) but for the insertion at the last moment of a proviso which gave flexibility to the organization of the Army as regards its enlisted strength.

This act, in conjunction with the joint resolution approved June 4, 1900, made it possible for the President to authorize an increase of the regular enlisted force of the Signal Corps to 800, while the inadequate commissioned force of 11 was supplemented by 41 volunteers, whose commissions expire June 30, 1901.

For convenience of reference the field operations of the Signal Corps are treated in this report geographically under the various headings of Alaska, China, Cuba, the Philippines, Porto Rico, and the United States.

## MILITARY TELEGRAPH LINES AND CABLES.

Signal corps work in the United States falls naturally under four heads, viz: Signal corps instruction, military telegraph lines, supply depots, and electrical installation for control of artillery fire.

Only such permanent military telegraph lines are maintained in the United States as are essential to an efficient military administration in localities where commercial telegraph lines are lacking, or as are deemed necessary for safeguarding the frontier settlements in case of Indian outbreaks. Such lines aggregate about 900 miles in length, and are situated either along the Mexican frontier or around and in the great Indian reservations of the trans-Mississippi region. The report upon this subject, made by Maj. Richard E. Thompson, Signal Corps, forms Appendix 1.

The volume of business, both Government and commercial, transacted over these lines has been very large during the past year, nearly 55,000 messages having been handled in the departments of Colorado and Texas alone. The tolls for the transmission of commercial messages have been collected and deposited in the Treasury without the loss of a single cent. These deposits aggregate the sum of $3,398.60. In addition there has been collected on account of commercial telegraph companies and turned over to these companies the sum of $5,111.26, due for tariffs on commercial lines, there being no loss, either by mail or otherwise.

While the signal officer of each military department is in charge of the telegraph lines of his department under peace conditions, yet such action has not been practicable during the past year, owing to the lack of officers of the Signal Corps. It need only be stated, as showing the strenuous demands upon the corps, that there is now no signal corps officer, either regular or volunteer, on duty in the United States west of Washington.

Until October 1, 1899, Capt. John B. Bennet, United States Army, acting signal officer, Department of the Colorado, Denver, Colo., received and accounted for all line receipts of military telegraph lines except those in the Department of the East, and still has charge of all receipts except those pertaining to the Department of Texas. Captain Bennet has performed his duties with such fidelity and success as to merit especial commendation.

First Lieut. H. R. Perry, Seventh Infantry, acting signal officer, Department of Texas, has had entire charge of the lines of his department since October 1, 1899, and, although performing these in addition to other duties, has conducted the administration of these lines with energy and success.

The extraordinary demands for trained operators of the Signal Corps in the Philippines and China have necessitated the transfer from the permanent telegraph lines in the United States of every Signal Corps man whose health was such as to permit of foreign service. In consequence no less than 17 out of the 26 stations are now operated by civilians, thus considerably enhancing the cost of the maintenance of these lines. While the conditions of the service have been such as to prevent the general overhauling of these lines, yet they have remained in a serviceable condition throughout the year, interruptions being very rare and of short duration.

The permanent military telegraph lines have been, as occasion required, supplemented by temporary telegraph and telephone lines, which have been constructed and dismantled as necessity demanded and circumstances permitted. Notable among these lines was that constructed at the Presidio, in connection with the return of the Volunteer Army from the Philippines, at the muster-out camp and hospital, and at post headquarters, through which telegraphic and telephonic facilities of modern character were afforded both the Army and the interested public. There was also constructed at the Presidio a telephone line connecting the small-arms rifle ranges with department headquarters, and with the headquarters of the commanding officers of both the recruit and the volunteer infantry camp. At Fort McDowell, San Francisco Harbor, a telephone line was constructed which connected that post with the detention camp at Quarry Point, with the quarantine hospital, and the post telegraph office.

The system of short cables which have been laid in connection with seacoast fortifications in the more important harbors of the United States have, as a rule, been maintained in successful operation without injury or interruption throughout the year. Exceptionally it may be mentioned the 3-conductor cable at Fort Delaware, which, disabled evidently by the anchor of some ship, has been repaired.

More serious interruptions and repairs were necessary in connection with the system of Signal Corps cables in New York Harbor between Fort Hancock, N. J., and Forts Wadsworth and Hamilton, N. Y. This system has been very badly handled by vessels which have picked up the cable by their anchors. The injuries were so extensive that it became necessary to recover the entire cable, when it was found to be in no less than eleven pieces, several of the breaks having been made with an axe. The cable has been thoroughly repaired, put in first-class condition, and relaid. While occasional interruptions may be looked for in this cable, yet special efforts are being made through the courtesy of Brig. Gen. John M. Wilson, Chief of Engineers, United States Army, to remove it to a route where the chances of injury will be reduced to a minimum.

### SUPPLY DEPOTS.

The extraordinary development of Signal Corps operations in the Philippines made it necessary to supplement the supply depot in Washington by similar depots in New York and San Francisco. The depot in San Francisco was under Maj. Frank Greene, signal officer of volunteers, until June, 1900, when it was transferred to Capt. A. B. Dyer, Sixth Artillery, acting signal officer. The depot in New York was originally under First Lieut. Leonard D. Wildman, signal officer of volunteers, and later under Capt. Samuel Reber, Signal Corps. There being no Signal Corps officers available for special assignment to these duties, the services of the above-named officers who were signal officers, respectively, of the departments of California and the East, were obtained through the courtesy of Maj. Gen. W. R. Shafter, U. S. V., Maj. Gen. Wesley Merritt, and Maj. Gen. John R. Brooke. The duties connected with these supply depots involved the purchase of large amounts of material, their inspection and their shipment to the Philippines, Cuba, Porto Rico, and Alaska. The work involved demanded a large amount of time, unusual care, and in many cases a high order of professional knowledge. While these duties were performed in a most prompt and efficient manner, especially by Major Greene and Captain Reber, officers of the Signal Corps, yet the chief signal officer feels it but proper to acknowledge the energy and success with which Captain Dyer has performed his novel and additional duties as signal officer, Department of California. Captain Dyer's promptness and energy were particularly notable in connection with the supply of field material for Signal Corps use in China.

### FIRE-CONTROL SYSTEM FOR SEACOAST ARTILLERY.

As far as the limited appropriations would permit, and the present unsettled condition of the fire-control system made possible, the Chief Signal Officer of the Army has cooperated with other staff departments in perfecting these electrical installations, so absolutely essential to the successful operation of the modern seacoast artillery that is relied upon for the defense of our important harbors. With a view to taking this work in hand at the earliest practicable moment the Chief Signal Officer of the Army has added to his estimates the sum of $30,000 for work of this character.

It should be understood, however, that appropriations alone can not insure a satisfactory system in default of adequate and carefully devised plans for electrical installations, which it is evident must vary somewhat according to the topography of the locality and the physical environment obtaining at different fortifications.

Owing to the fact that no such definite system of fire-control communication has been prescribed, it has in the past been impracticable for the Chief Signal Officer of the Army to speedily and properly fill requisitions for supplies for the component parts of such installations. The system prescribed by the drill regulations for seacoast artillery is so indefinite in its nature as to prove of doubtful value in projecting a plan for any single artillery post. Its provisions are tentative and of too general a nature to enable them to be followed. Even the types of apparatus for the component parts of the system have not been prescribed, and although the Chief Signal Officer has repeatedly asked for a definite determination of types, he has not as yet been furnished with them. Unfortunately the Signal Corps acts in this matter as a supply bureau only, and is not charged with problems of design.

In this connection the Chief Signal Officer of the Army has several times enunciated the principles which govern his actions in these matters. At the request of any department commander he is willing to take up the problem of electrical installation for the fire-control system of any given post, and the Signal Corps will hold itself responsible that such system is put in efficient working order. On the other hand, as far as his appropriations permit, he is willing to furnish, on the requisition of any department commander, the fire-control system for any given post on plans and specifications furnished by any other branch of the service. In this latter case the Signal Corps will guarantee to deliver instruments and material in exact accordance with the specifications, but it can not be held responsible for the efficient working of any system devised by any other corps of the Army. These principles are those which underlie the operations of commercial companies in connection with electrical installations. They embody the sound principle that the originator of the system, and not the manufacturer, should be entirely responsible for its successful operation.

Under existing orders and regulations no single staff corps of the Army is charged with the unification and systematization of the electrical installation at the various artillery posts. The electrical equipments of a post should be an entity and its component parts designed and adjusted to make one united whole. It is unquestioned that if one department was charged with the solution of the various problems arising in the unification of an installation, much greater economy, simplicity, and efficiency would result.

A board of officers has been designated by paragraph 17, Special Orders, No. 136, Adjutant-General's Office, current series, for the purpose of preparing and formulating a system of electrical communication for use in position finding and for artillery fire control and direction for seacoast armament. When the board submits a system and it has been approved, the Chief Signal Officer will have for the first time something definite to serve as a basis for preparing estimates for its proper installation. At present, according to the provisions of General Orders, No. 66, Adjutant-General's Office, current series, four separate staff corps are charged with supplying the various articles needed for the electrical installations of posts. The articles are mentioned in a general way only. If it is not deemed expedient to devolve the duties of electrical installation upon one staff corps, the provisions of General Orders, No. 66, should be made more definite.

## SIGNAL INSTRUCTION IN MILITARY DEPARTMENTS.

Instruction in signaling in the United States has been carried on as usual on two different lines:

First, that of the simplest character in accordance with paragraph 1544, Army Regulations, under department commanders, with a view of enabling independent organizations to communicate with other organizations in cases of necessity.

Second, at the Signal Corps post, Fort Myer, Va., where men have been thoroughly trained in visual signaling, in line building, in telegraphy, in telephony, and in some instances in photography, map drawing, and other duties of a similar character.

The duties of signal officers of military departments in the United States have been performed almost entirely by officers detailed from the line of the Army, who have performed the signal duties in addition to their other staff duties. Reports of these officers form parts of the reports of the commanding generals of the departments.

The duties have been performed in the Department of the Columbia by Capt. H. P. McCain, Fourteenth Infantry; in the Department of Dakota by Lieut. J. P. Wade, Second Cavalry; in the Department of the Lakes by Lieut. Col. W. P. Hall, assistant adjutant-general, and in the Department of the Missouri by Lieut. Delamere Skerrett, First Artillery. Whatever deficiencies there may have been in instruction in military signaling in these departments, such have not arisen from lack of energy or ability on the part of signal officers, but from circumstances beyond their control, as the strictly limited number of troops within the limits of the United States have made technical military instruction practically impossible.

It must be noted, however, that instructions in signaling, intrusted by the provisions of paragraph 1544, Army Regulations, to signal officers of department under the direction of the department commanders, have been almost fruitless in this as in past years. This instruction has been reduced by orders and regulations to the lowest limits compatible with the efficiency of the Army, as it only contemplates that each independent command shall have two officers and two enlisted men able to exchange signal messages in the simplest manner and at short distances by day or night.

As has been stated in previous annual reports, this system of signal work by detail throughout the Army has invariably failed in producing either officers or men competent to handle signal parties even against untrained foes. This is not surprising when one considers the multiplicity of duties which from time to time have devolved upon officers and men of the line. The same rule must apply to the Army as in commercial life, of depending on experts for technical work.

The Chief Signal Officer of the Army concurs in the opinion expressed in the report of Maj. E. L. Huggins, Sixth Cavalry, acting inspector-general Department of the Lakes, "that signaling and everything pertaining to it be put in the hands of the Signal Corps only. As managed now it only serves to take officers and men from their proper duties to half learn something they will never use if the Signal Corps performs theirs."

In the Department of California, Maj. Frank Greene, United States Volunteer Signal Corps, remained in charge until May 31, 1900, when he was relieved by Capt. A. B. Dyer, Sixth Artillery, who has performed most efficiently the duties of signal officer of the department in addition to his other duties. Major Greene built and operated the telephone and telegraph lines which the needs of the military service required in the vicinity of San Francisco in connection with the return of volunteers and the establishment of a quarantine. In addition, considerable work has been done in extending the fire-control system for the use of the artillery at Forts Mason and Baker. Telegraphic facilities were also temporarily furnished the Marine-Hospital Service in connection with the quarantine in an emergency. Major Greene, in addition to his ordinary duties as signal officer, and through the courtesy of the commanding general of the department, has been of very great assistance to the Chief Signal Officer of the Army in connection with the purchase, inspection, and shipment of large quantities of signal supplies to the Philippines, and in supervising the transshipment of stores coming from other points. Not the least important of Major Greene's special duties has been the enlisting, training, and forwarding of the recruits of the Signal Corps, which has involved a very large amount of clerical work in addition to the supervision, training, and instruction given these recruits so as to make them of the greatest utility upon arrival in the Philippines. In this, as in other matters, Major Greene has displayed ability, zeal, and application, which indeed have characterized his previous military service.

Captain Dyer has most efficiently performed his duties as successor to Major Greene and has rendered special service, as elsewhere noted, in connection with the signal campaign in China. In addition, Captain Dyer installed two wireless-telegraph stations, one at Fort Mason and the other at Alcatraz Island, thus covering parts of the harbor of San Francisco over which it has been impossible to successfully maintain cables, owing to its use as an anchorage ground and the entanglement of anchors with the cables. The system works most satisfactorily. Its installation was made under the direction of Mr. Carl Kinsley, a civilian expert of the Signal Corps in this matter.

In the Department of the Colorado, Capt. John B. Bennet, Sixteenth Infantry, has continued on duty as signal officer of the department. Captain Bennet, while able to give only a portion of his time to the signal work of the department, has conducted it with the same efficiency and success as characterized his duties during the previous year. There are five sections of military telegraph lines, aggregating 510 miles, under his charge. In the early part of the year, when the demands upon the Signal Corps were particularly pressing for foreign service, Captain Bennet cheerfully assumed charge, in addition to the military lines of the Department of the Colorado, of the lines of all other departments in the country except the Department of the East. His money accounts have been promptly and accurately rendered. In no case has there been a loss of money in connection with the operations under his charge.

In the Department of Texas, First Lieut. H. R. Perry, aid-de-camp, has had charge of signal operations in that department since October 1, 1899, and has satisfactorily handled with promptness and ability the affairs of the military lines in the department, which he reports has greatly benefited the transacting of public business and the operations against smugglers and desperadoes, so numerous along the Rio Grande.

Capt. Samuel Reber, Signal Corps, with his usual vigor, has performed an enormous amount of work in addition to his ordinary duties as department signal officer, and has displayed the same qualities of energy, zeal, and professional aptitude which marked his service in Cuba and Porto Rico. Not only has he satisfactorily handled all questions submitted to him in connection with the fire-control system of the Department of the East, the most extensive of the entire country, but he has also conducted with untiring interest and success experiments in the evolution of wireless telegraphy, which experimental work, as mentioned elsewhere, was transferred to him by Capt. George O. Squier. Captain Reber has also been of the greatest possible assistance to the Chief Signal Officer of the Army in the purchase and inspection of electrical instruments, material, and apparatus intended for use in Alaska and the Philippines. This work, especially in connection with the testing of submarine cables, involved a fundamental and accurate knowledge of electrical laws, and of instrumental devices, of a rare order possessed only by modern electrical experts.

## SIGNAL CORPS POST, FORT MYER, VA.

On December 22, 1898, the Secretary of War approved the setting aside for a Signal Corps post of a portion of the Fort Myer Reservation. The ground was carefully surveyed and formally assigned to the Signal Corps by direction of the Secretary of War, with the proviso that this corps was to have no power as to the water, sewers, roads, or other matters affecting the integrity of the reservation as a whole.

On the ground thus mapped and formally set aside has been constructed a separate post, known as the Signal Corps Post, Fort Myer, Va., whereat have been erected barracks for a force of 100 men, quarters for 3 officers, an administration building, a balloon house, and a storehouse for Signal Corps purposes. In these buildings has been installed a school of instruction, wherein the recruits are trained not only as soldiers, but are qualified for service as electricians, telegraph operators, and signalmen. This action concentrates at one point the methods of Signal Corps instruction, and avoids the wastefulness, ununiformity, and deficiencies which necessarily marked the operations at three Signal Corps schools of departmental instruction, which were instituted prior to the Spanish-American war at Fort Logan, Colo., the Presidio, Cal., and at San Antonio, Tex., under the control and direction of the signal officers of the various departments.

The wisdom of the action of the Secretary of War in this respect has been fully justified by practical results during the past year, for without the course of uniform and proper training, which are only possible at a post of this kind, it would have been absolutely impossible to meet even the most urgent demands for telegraph operators in the Philippines. The plan followed at this post has been the collection thereat of all men unsuited for service elsewhere, either through impaired health or insufficient training. Here have been brought the recruits of the Signal Corps, usually intelligent young men between the ages of 20 and 25, whose inclinations and aptitudes were judged by the recruiting officers to render them fit for a course in theoretical and practical electricity.

The report on the operations of this post (Appendix 2) is by Capt. G. W. S. Stevens, signal officer of volunteers, to whose ability, energy, and zeal since the initiation of this enterprise is due the present creditable condition of the post. Under his personal supervision the barracks, storehouse, and officers' quarters have been constructed. The work has been done under very great disadvantages, Captain Stevens having, for most of the year, only one assistant, First Lieut. George C. Burnell, signal officer of volunteers, a most efficient and zealous officer. Upon these two officers devolved duties which ordinarily should have engaged the attention of six. This post has been the depot where have been collected all the recruits of the Signal Corps and men invalided from Cuba and Porto Rico. Here also has been gathered all the Signal Corps property left at the various camps in the United States, after the disbandment of the Volunteer Army. The work of caring for both men and property was so vast as to tax the energies of the officers, but to this was added the construction of a military post. The volume of office and clerical work was simply enormous, as may be judged from the fact that the total changes in the enlisted force of the post during the year exceeded 700, thus requiring the adjustment of about 60 individual accounts of enlisted men during each month.

It being impossible to enlist a sufficient number of telegraph operators for foreign service it became necessary to train up recruits for this work, and for this purpose a large number of men between the ages of 20 and 25 were enlisted by recruiting officers, who, under special instructions from the Adjutant-General of the Army, selected for this purpose men of intelligence, aptitude, and character. Instruction has been unceasing in telegraphy and telephony, in visual signaling, in line repairs, and other duties devolving upon the enlisted men of the Signal Corps. The plan was followed of educating operators until they could receive about twenty words per minute on practice lines, and then scattering them as assistants at the military telegraph stations in the United States, whence they were transferred to the Philippines as soon as they had acquired confidence and skill in handling commercial messages over the Signal Corps lines.

It must not be thought that the instruction in the duties of the soldier were at all lacking. Indeed, such was the success with which military instruction was conducted, conjoined to the high character of the men as a class, that the favorable report of Col. P. D. Vroom, inspector-general, who inspected the post on May 31 and June 1, 1900, developed the very remarkable court-martial record of only 50 summary court cases in the year and 2 general court-martial cases in a garrison which had numbered nearly 1,000 men since the establishment of the post.

Through the courtesy of the Quartermaster-General the valuable services of Maj. Theodore A. True, quartermaster, have been available in connection with the construction of the administration building and balloon house, for which an appropriation of $18,500 was made by the last Congress. Although these duties were assumed by Major True in addition to his other arduous duties as depot quartermaster, yet he has performed them with such interest and skill as to insure for the Signal Corps the best possible results commensurate with such a small appropriation. Indeed, had it not been for the cordial and efficient cooperation of Quartermaster-General M. I. Ludington, which also made available the valuable services of Maj. M. C. Martin and other efficient officers of the Quartermaster's Department, the construction work of the Signal Corps at this post would have been almost impossible of satisfactory execution.

### OPERATIONS IN ALASKA.

The action of Congress, which by the act approved May 26, 1900, provided for an extensive system of military telegraph and cable lines in Alaska, made it necessary to extend the operations of the Signal Corps to that department, to which Maj. Frank Greene, United States Volunteer Signal Corps, has been assigned as signal officer.

Major Greene's report is incorporated in the report of the commanding general of the Department of Alaska, but extracts therefrom form Appendix No. 18. While it could not be expected that any considerable part of the Signal Corps lines in Alaska are working, yet it is gratifying to report that two sections are already in operation. In southeastern Alaska one of about 41 miles extends from Port Valdez north to military station No. 3; the other in the Nome region, 25 miles in length, connects Nome with Safety Harbor, at which latter point the cable from St. Michael will land. In addition, there have been constructed 28 miles of line in detached portions in the Yukon Valley, making an aggregate construction of 94 miles.

Indeed, it is a matter of congratulation, due to the extraordinary energy and activity of the officers and men of the Signal Corps and the hearty cooperation of Gen. George M. Randall, commanding Department of Alaska, that any work at all has been done in Alaska during the past summer.

The act making the appropriation for this telegraph system did not become a law until May 26, 1900, at a period when the brief open season of four months, during which alone line material could be transported into Alaska, had already commenced. Although the greatest rapidity consistent with law was exercised in the purchase, inspection, and transportation of material and supplies for the Alaskan work, yet it was the middle of August before any tools or material were delivered, except in southeastern Alaska, at Port Valdez, where operations were possible a few weeks earlier.

It must be understood that the entire amount of wire, insulators, and far the greater portion of material and tools were necessarily purchased on the Atlantic slope, the only section of the country in which articles of this kind can be promptly procured. In many cases the material had to be made to order, and even when purchased, after legal delays in procuring bids, it was necessary to transport all these articles and material across the continent to Seattle, whence it was shipped to St. Michael, Alaska, a total distance of more than 7,000 miles. Transshipped again at St. Michael by the necessities of transportation, the stores only reached places in the valley of the Lower Yukon near the end of August. The middle and upper Yukon were accessible only at later dates, not yet definitely known to the Chief Signal Officer.

In connection with this work the Chief Signal Officer necessarily took a personal part, for lack of officers familiar with such operations. It is not generally understood that the Alaskan telegraph systems, while placing all the Alaskan posts in connection with the commanding general of the department when completed, would not afford means of communicating by telegraph with any other part of the world. In order to increase the value of the Alaskan system the Chief Signal Officer of the Army conferred with the authorities of the Canadian Government at Toronto with a view to an extension of the existing

Canadian telegraph lines. The end in view was the establishment of cooperation in telegraphic work between the Alaskan and Canadian systems, and more particularly the extension on the part of both countries of their lines to the international boundary on the Yukon. The distinguished premier of Canada, Sir Wilfrid Laurier, showed marked interest in the views advanced by the Chief Signal Officer of the Army and expressed his desire to further any plan that would bring the two countries into closer and more cordial relations, especially in the Northwest. The matter was immediately taken up in the same spirit by the acting minister of public works, the Honorable William Mulock. After brief consideration the council approved all the recommendations of Mr. Mulock, and on its recommendation an appropriation was made by the Canadian parliament for extending the Canadian telegraph line down the banks of the Yukon to the Alaskan boundary.

In July the Canadian government courteously sent to Seattle, for conference with the Chief Signal Officer of the Army, Mr. J. B. Charleson, assistant superintendent of public works in the Yukon district, who was charged with the extension of the Canadian telegraph line from Quesnelle to Atlin. Mr. Charleson also undertaking the extension from Dawson to the Alaskan boundary, has energetically pushed the Canadian work, while on the other hand Brig. Gen. George M. Randall, commanding general, Department of Alaska, has given orders for the prompt construction of the line from Fort Egbert (Eagle City) to the Yukon boundary. The Chief Signal Officer has received no report from Fort Egbert as to progress made, yet there are reasons to believe that before the end of November the first fruits of the action by Congress will be shown in the telegraphic connection of Fort Egbert with the commercial systems of the world over the Canadian telegraph line from the international boundary via Dawson, Atlin, and Quesnelle to Ashcroft on the Canadian Pacific Railway.

In furtherance of the work and in order to obtain the only information that as a rule is of value in Alaska, that of personal observation, the Chief Signal Officer visited the military posts in the Yukon Valley at St. Michael and at Nome, but was unable for lack of time to visit the Port Valdez section in the Copper River country.

As a result of this inspection it developed that it is practically impossible to build, except at an enormous expense, a line from Fort Gibbon at the mouth of the Tanana along the great Yukon bend past the old trading post of Fort Yukon to Fort Egbert. Even with lavish expenditures it is probable that fully two years would be required to complete the work. After consultation the commanding general of the department expressed his accord with the opinion of the Chief Signal Officer in this matter. It was therefore decided after consultation to locate a line across country between Fort Gibbon and Fort Egbert. It may or may not, according to circumstances, intersect in its construction the Signal Corps line now being built from Port Valdez across country to Fort Egbert. An officer and men are already in the field making the preliminary survey and, if a suitable route is selected this autumn or winter, construction will begin in the spring of 1901. Even if such a route does not materially decrease the cost of the line it will hasten its completion, in view of the fact that the distance from Fort Gibbon to Fort Egbert is about 600 miles, while the cross-country route, being the chord of an extensive arc, should not exceed 450 miles in length.

At the end of August the following parties were in the field in the Yukon Valley: Second Lieut. Otto B. Grimm, United States Volunteer Signal Corps, working northward on the Yukon from Kaltag; Second Lieut. William O. Smith, Seventh Infantry, working northward from Nulato; First Lieut. Percy M. Cochrane, Seventh Infantry, working southward from Fort Gibbon. In addition there was presumably a party under the direction and orders of Capt. Charles S. Farnsworth, Seventh Infantry, working along the Yukon eastward from Fort Egbert to the international boundary toward Dawson.

On September 1 several miles of poles had been erected, and reports indicate that the work was progressing with greater rapidity than was at first deemed practicable in such a country, as the greater portion of the Yukon Valley was believed to be most unfavorable to telegraphic construction.

Major Greene commenced active operations by sending First Lieut. George C. Burnell, signal officer of volunteers, July 9, with a detachment of Signal Corps men to Port Valdez, where work was commenced about the middle of July on the line from Port Valdez toward Fort Egbert. At the end of August, the latest date on which information was received from him, there had been completed about 26 miles of line. Future work will be facilitated by the arrival of pack animals which were en route at the date of his last report. The Port Valdez section, comprising the line between King William Sound and Fort Egbert, over what is known as an all-American land route to the valley of the Upper Yukon, follows closely the military road now under construction by Capt. William R. Abercrombie, Second Infantry, acting engineer officer, Department of Alaska.

Upon his arrival at St. Michael, early in August, Major Greene began active operations for work in the Cape Nome region and in the valley of the Yukon. General Randall, commanding the department, realizing the very great military value of these lines to the successful administration of the Department of Alaska, not only issued the necessary orders for field operations, but reenforced them by both personal advice and official interest, thus contributing greatly to the satisfactory progress of the work.

Under the supervision of Maj. John T. Van Orsdale, Seventh Infantry, there was completed, about September 15, a first-class telegraph line, on iron poles, of about 25 miles in length. It extends from Nome City through Fort Davis eastward to Safety Harbor, where ultimately it will connect with the cable to St. Michael, the headquarters Department of Alaska.

Cable work was initiated under contract with manufacturers in accordance with the system followed by the leading cable corporations of the world. There was good reason to believe that Mr. W. R. Brixey, of New York, to whom was awarded the contract for the construction, laying, and installation of the cable lines between Unalaklik and St. Michael to Nome, would have the entire system in operation by the end of September, 1900. Such would undoubtedly have been the case had not a marine disaster delayed somewhat the laying of the cables. The contractors constructed the cables with an energy and success most creditable to American manufacturers. One hundred and ninety miles of cable passed successfully most severe tests, given them at the place of manufacture by Dr. A. E. Kennelly, one of the leading cable experts of the United States. The cables were transferred safely across the continent and loaded on the *Orizaba*, a steamer belonging to the Pacific Coast Steamship Company, the leading navigation company of the Pacific coast. Most unfortunately the successful laying of the cable, which was begun by the contractors on the morning of September 17, 1900, was interrupted by the grounding of the *Orizaba* on a rock, about 5 miles north of St. Michael.

The last reports from the contractors, dated September 22, indicate that the whole cable will be saved, as at that time about 140 miles of it had been recovered by steamers of the Alaskan Commercial Company, and it was thought that the entire lot would be landed on the following day. Whether the contractors will be able to make arrangements for laying the cable this autumn is a matter of uncertainty, though it is quite evident that every effort is being made in this direction. While the disaster entails no pecuniary loss on the United States, the lack of telegraphic communication with garrisons at Nome City and Fort Davis, in the great mining district of Nome, will prove an embarrassment to the commanding general of the department, who had relied on this facility in connection with his duties for the coming winter.

It is absolutely necessary that a proviso be incorporated in the army appropriation bill for the coming year making the appropriation for military telegraph lines and cables in Alaska available until June 30, 1902. Unless this is done the entire work must utterly fail, after the expenditure of large sums of money for material and labor, as the Comptroller of the Treasury has decided that the appropriation expires at the end of the present fiscal year. It is not generally understood that the open season does not begin in Alaska until some time in May, so that there will remain only about six weeks of summer weather during the present fiscal year, thus necessitating this provision so that the work may be carried to completion.

The commanding general, Department of Alaska, most strongly recommended to the Chief Signal Officer of the Army the extension of the Alaskan lines to Seattle by a cable from Port Valdez, which, passing by way of Skagway, should reach Juneau and thence Seattle or some other suitable point on the Pacific coast.

If the Government intends to make its military administration, its judicial system, and the territorial authority in Alaska thoroughly efficient it will be necessary to take some action of this kind. The most pressing need would seem to be a cable from Skagway to Juneau, about 125 miles in length, which, however, could be purchased and laid from available appropriations. This would not only connect the military post at Skagway with Juneau, the capital of Alaska, but would enable the territorial authorities to reach, via Skagway and Dawson, the points in the Yukon Valley now so remote that, as a rule, not more than two or three letters upon any subject can be exchanged in the course of a year. A cable from Skagway to Valdez would be about 650 miles in length, and could be laid for about $300,000. A cable from Skagway to Seattle, passing outside of Vancouver and Queen Charlotte islands so as to avoid any international complications, would be about 1,150 miles long, and could probably be laid for about $500,000.

These cable connections seem absolutely essential if the United States intends to encourage commercial and other enterprises in Alaska with a view to development and its becoming, as is possible, a territory of the greatest financial value to the American Republic. The attention of the Secretary of War is earnestly called to a consideration of this subject.

### OPERATIONS IN CHINA.

While the campaign in China occurred subsequent to the last fiscal year, yet from its importance and interest it seems advisable to treat the subject in this annual report. The Chief Signal Officer of the Army has not, however, received the official report of Maj. George P. Scriven, signal officer of volunteers, which doubtless forms part of the report of Gen. Adna R. Chaffee, commanding general of the expedition. The Chief Signal Officer is consequently obliged to base his treatment of these operations upon the action taken in this office, or in accordance with instructions therefrom, supplemented by information contained in cablegrams which have passed to and from this office regarding military affairs.

The expedition to China was necessitated at a time when the energies of the officers and men of the Signal Corps of the Army were taxed to the utmost. There was at that time not a single officer of the Corps, either regular or volunteer, on duty west of Washington.

Alive to the absolute necessity of equipping an army in foreign territory with independent means of electrical communication, the instructions of the Secretary of War to the Chief Signal Officer devolved upon the latter the duty of providing a suitable force of the Signal Corps to accompany the American expedition for the relief of the United States legation at Pekin.

By direction of the Secretary of War, Adjutant-General Corbin sent General MacArthur, commanding the division of the Philippines, orders to detail a suitable Signal Corps force for duty with the Ninth Infantry, then under orders for duty in China. At the same time the Chief Signal Officer of the Army, by cable, instructed Lieut. Col. James Allen, signal officer, division of the Philippines, as to the needful equipment. It appears that the widely extended operations of the Signal Corps then in progress in the Philippines made it impossible to spare any considerable force. Under General MacArthur's direction, Colonel Allen selected one officer and fifteen men, who were furnished with material and equipments necessary for the construction, operation, and maintenance of 50 miles of flying telegraph lines. The officer selected was First Lieut. Henry W. Stamford, signal officer of volunteers, whose extended experience and successful work in Cuba and the Philippines were guaranties of like work in his new field of operations.

Upon the arrival of Gen. A. R. Chaffee in Washington, that officer in conference with Adjutant-General Corbin and the Chief Signal Officer of the Army, asked that the Signal Corps force and material destined for China be largely increased so that the detachment should be commensurate with the large command and the importance of the situation. While exigencies in other directions did not permit of as large of detail of officers and men as would have been desirable, and the limited time forbade any special collection of material, yet every effort was made to equip the Signal Corps of the American division in China to such an extent as would enable it to properly perform any duty assigned to it.

Maj. George P. Scriven, signal officer, Department of the Visayas, was relieved by orders from Washington and sent to Chefoo to report to General Chaffee as signal officer of the division. In the United States the Chief Signal Officer of the Army diverted two officers, Second Lieuts. Peter Bartsch and Charles O. Hastings, signal officers of volunteers, together with seven Signal Corps men, who were en route to the Philippines, and they were directed by the Secretary of War to report to General Chaffee for duty. The greatest difficulty was experienced in collecting at San Francisco, within a period of four days, material and instruments for the construction, operation, and maintenance of 100 additional miles of flying telegraph line, it being considered practically impossible that the lances and other material that had to be specially manufactured could be delivered in time. By free use of the express and by additional prices for lances and such other Signal Corps material as required night labor, and largely through the indefatigable exertions of Capt. A. B. Dyer, acting signal officer, Department of California, General Chaffee sailed on the *Grant* from San Francisco carrying with him full supplies for 100 additional miles. This made his equipment 150 miles of flying telegraph line, manned by 5 officers (Second Lieut. Harry W. Capron being promoted from first-class sergeant after his arrival in China) and 33 enlisted men of the Signal Corps.

Prior to General Chaffee's arrival at Taku, Lieutenant Stamford had shown his energy, activity, and judgment.

To elucidate the situation as regards telegraphic facilities with China, it is to be stated that Taku, Tientsin, and Pekin were connected with foreign cables only through a system of Chinese land lines, which remained entirely under Chinese control.

The Eastern Extension Cable Company necessarily turned over its telegrams at Shanghai and the Great Northern Cable Company did likewise regarding cablegrams sent to Port Arthur, until the connections by this route were broken.

When the extensive interruptions of the local Chinese land lines occurred between Pekin and Taku the Great Eastern Company sent its cablegrams over Chinese land lines to Chefoo, and the Great Northern sent its messages from Chemulpo, Korea, by infrequent dispatch boats. All communication, therefore, depended ultimately on the fidelity and good will of the officials in charge of the Chinese land lines between Shanghai and Chefoo. Under these conditions telegraphic communication with China in the early days of the campaign was vexatiously slow and never reliable. It should also be understood that the United States, not having adhered to the International Telegraph Union, could claim telegraphic facilities only after the official dispatches of the adhering nations had been transmitted.

It thus happened that the War Department was for nearly ten days unable to obtain on its own account any direct information from its officers in China, being dependent on occasional reports of the Navy and of the press. Acting under direct instructions from the Secretary of War, communication with Lieutenant Stamford was finally opened by the Chief Signal Officer of the Army. He was only able to do this through the courtesy and assistance of the Marquis of Tweeddale, president of the Eastern Extension Cable Company, and of Commodore Suenson, president of the board of directors of the Great Northern Telegraph Company, who courteously and promptly complied with the requests of the Chief Signal Officer of the Army for their immediate and efficient cooperation.

From Lieutenant Stamford came the first official information, beyond the mere fact of a battle and Colonel Liscum's lamented death, of the condition, necessities, and prospects of the small American force then on duty in China; also information as to the very trying conditions under which cable and other communication were had. It appeared that the only way of sending a cablegram was by its transmission by means of a small boat to the American squadron, which lay 10 miles offshore, after which the cablegram had to await the sending of a man-of-war to Chefoo, from which point the cablegram experienced its vicissitudes over the Chinese land lines to Shanghai.

From Lieutenant Stamford came, after the long silence and great period of anxiety when news from the besieged legations in Pekin was lacking in Europe and throughout the world, the first cheering assurance of their safety. On July 23 Lieutenant Stamford sent a cablegram, received July 27, as follows:

> With reference to your telegram of 18th, just received, conditions, prospects, health command good. * * * Fairly reliable reports state our minister and people in Pekin all well on the 20th.

After General Chaffee's arrival in China, Lieutenant Stamford remained as signal officer of the division until the arrival at Taku early in August of Major Scriven, from Iloilo. On August 3, Lieutenant Stamford cabled that he had commenced the construction of a Signal Corps telegraph line from Tientsin to Pekin, coincident with the advance of the allied army toward the capital of China. On his arrival, Major Scriven continued Lieutenant Stamford in his field command of the Signal Corps force.

Col. James Allen, realizing the absolute necessity of field transportation for the construction of a telegraph line, had obtained an army wagon for the exclusive use of the Signal Corps detachment which took it along from Manila. Unfortunately, and under most urgent necessity, this transportation was taken away from the corps, leaving it to put up a telegraph line of 150 miles without means of land transportation.

In this emergency Lieutenant Stamford followed the example of the armies of eight nations which were levying upon all carts, mules, horses, coolies, and other local means of transportation. By dint of great energy he succeeded in pressing into service a motley variety of carts and mules, together with a considerable number of Chinese laborers. Lieutenant Stamford carried with him all indispensable instruments, and as much wire, lances, and insulators as was possible. He was, however, obliged to rely on the courtesy of the officers of the British army, who supplied him with many lances and also transported his surplus wire by lighters up the river to Matow.

Until Matow was reached Lieutenant Stamford, by extraordinary exertions, had succeeded in keeping Chaffee's division in communication with Tientsin and scarcely a night passed without the establishment of a Signal Corps telegraph office at American headquarters. At Matow, however, the wire gave out, and Lieutenant Stamford found himself obliged to wait two days for the arrival of the extra wire by lighters, but by most extraordinary exertions he succeeded in covering the ground lost by two days' marches and brought Chaffee's command again in communication with Tientsin.

The conditions under which these operations were conducted in the field were most trying. They entailed not only marching as fast as the army and the construction of a telegraph line equal in length to the daily marches, but also the establishment of telegraph stations at night, their dismantling in the morning, and the dispatch of telegrams during a considerable part of the night. The difficulties were greatly enhanced by the fact that for days at a time the detachment was obliged to work without escort or any protection other than reliance on its own members.

Most unfortunately, this labor, exhausting at the best, was done under most unfavorable climatic conditions, the heat being so excessive as to frequently disable for hours the most energetic men of the Signal Corps. Many of the Chinese laborers were prostrated, and in one day two of them dropped dead from heat and overexertion.

Lieutenant Stamford was alive to the necessities of the occasion, realizing that the nearest telegraphic force was two days behind him. This was the military telegraph organization of the Japanese army, which, being near home, not only had its full equipment, but also a force of 100 enlisted men and 20 or more army carts. As it was, all telegraphic reports of advance operations of the allied armies in the march to Pekin necessarily passed over the Signal Corps line. The occupation of Pekin was thus reported.

It is to be added that during the advance the first information as to the capture of Yangt-sun, on August 6, was received from Major Scriven, Signal Corps, although his telegram of that day was delayed three days in transmission—doubtless owing to the demoralized and congested condition of the Chinese land lines between Chefoo and Shanghai.

In view of the trying and unfavorable conditions recited, it is a source of gratification that the Signal Corps detachment justified the confidence placed in it by General Chaffee and by the Chief Signal Officer. Through the labors of Lieutenant Stamford's men the American army carried the first telegraphic wire into Pekin, where the first telegraph office was installed in the house of Minister Conger.

Fortunately, this action permitted General Chaffee, in Pekin, to extend courtesies, in the way of transmitting telegrams, to officials of the British, Russian, French, German, Italian, and even Chinese governments, and likewise to the press.

So strenuous were the labors of the enlisted Signal Corps men, both before and after their arrival at Pekin, that it was with difficulty that telegraphic work was maintained at Pekin, owing to the large number of operators incapacitated by sickness.

It should not be unrecorded that the United States, so active and efficient in the relief of the legations at Pekin, used every effort to carry out the unanimous request of the foreign consuls in China looking to the prompt supplementing of cable communications by connecting Shanghai with Chefoo and Taku by an international line.

Under the instructions of the Secretary of War the Chief Signal Officer made every effort to bring about the end desired. While no international cable was laid, there is no doubt that the energetic exertions of the United States facilitated the prompt solution of the question. The outcome was the extension of commercial cables—the Eastern Extension and Great Northern companies have laid cables from Shanghai to Chefoo, from Chefoo to Port Arthur, from Chefoo to Weihaiwei, and from Chefoo to Taku. In other words, the finality of the cable question in China was on lines in keeping with the march of events in other directions. As a final outcome, Great Britain and Russia have enlarged the sphere of their influence by extending their cable systems to important Chinese stations previously inaccessible, while Germany is likewise engaged. From the present outlook the entire Asiatic coast will continue to be tied up by European cable corporations, to the utter exclusion of facilities entirely American.

## MILITARY DIVISION OF CUBA.

The telegraph lines and Signal Corps work connected with the Military Division of Cuba have remained throughout the year in charge of Col. H. H. C. Dunwoody, Signal Corps, who was assigned to this important duty in December, 1898, and under whom the telegraph system of Cuba has been developed to a high degree of efficiency. Colonel Dunwoody's interesting annual report is printed in full as an appendix to the report of the commanding general, Military Division of Cuba. In consequence, the Chief Signal Officer of the Army confines himself to a brief résumé of operations of the Signal Corps in Cuba, supplemented by extracts from reports (Appendix 3) made by Colonel Dunwoody under paragraph 1541, Army Regulations, on matters of current interest or special importance.

As pointed out in previous reports, the first action taken in Cuba was to construct a military telegraph line of a temporary character, so as to promptly place Maj. Gen. John R. Brooke, the commanding general, in direct communication with the garrisons on the island. This labor was performed by the Signal Corps of the Army, and at the expense of the United States. Such energy and application were shown under Colonel Dunwoody's direction as resulted in the establishment, within less than three and one-half months, of a telegraph line from Habana to Santiago. The system was shortly afterwards extended east and west, so that telegraphic communication was had from Baracoa, the extreme eastern end of the island, to San Juan y Martinez at the western end. The line was scarcely up before the entire Signal Corps force in Cuba—a body of able, energetic, and skilled volunteers—was disbanded and replaced by recruits enlisted in the regular Signal Corps. Large withdrawals of skilled men, and the heavy rains of the wet season immediately following, caused more or less line interruptions between Habana and Santiago. The native linemen, who were necessarily employed to replace the Signal Corps men, by their incompetency and indifference contributed to the inefficient working of the line. The rainy season over, Colonel Dunwoody took active steps to correct this condition of affairs. Capt. Samuel Reber, Signal Corps, made general superintendent of the lines, inspected the whole system from Habana to Santiago, located defects, and indicated remedies. Capt. Carl F. Hartmann, signal officer, Department of Santiago, initiated a system of repairs in his department calculated to remove the unfortunate results arising from the heterogeneous collection of telegraph wires of different gauges and material, which arose from the urgent necessity of throwing into one circuit, immediately after the surrender of Santiago, all field and permanent lines. Later, this work was continued with skill and energy by his successor, Lieut. John J. Ryan.

Meanwhile, with the revival of business it became necessary to place the Cuban telegraph system on a permanent basis, so that the increasing commercial business, which had been handled by the Signal Corps of the Army, could be made thoroughly efficient. Colonel Dunwoody, alive to the situation, took proper steps to accomplish the desired end, in which he was heartily supported by Maj. Gen. Leonard Wood.

It should be understood that the amounts received for the handling of commercial business were merged with the insular funds of the island, and that monthly allotments were made from these funds by the commanding general, Military Division of Cuba. It thus follows that the military telegraph lines in Cuba, while constructed, operated, and maintained by the Signal Corps of the Army, have been in some ways aided by the insular funds.

The signal corps military telegraph system in Cuba now comprises 3,256 miles, which is distributed in detail as shown in Appendix No. 3. This mileage is divided as follows:

| | Miles. |
|---|---|
| Department of Habana and Penar del Rio | 569 |
| Department of Matanzas and Santa Clara | 1,366 |
| Department of Puerto Principe and Santiago | 1,321 |

The main features of the system show main lines lengthwise through the center of the island, from the extreme east to the western end, with thirteen intersecting cross lines from north to south, covering the entire island with a network of telegraph lines of which almost every mile is in excellent condition. The bulk of the business, on the line between Habana, Matanzas, and Santa Clara, the great commercial centers, has a thoroughly reliable, excellent service by three separate wires. To the eastward from Santa Clara to Santiago there are two complete wires.

The efficiency of the service is shown by the record of Government telegrams passing between the United States and Porto Rico, which are routed via Habana and Signal Corps lines, and from Porto Rico via Santiago and Signal Corps lines. The orders require that whenever the telegraph service between Habana and Santiago is interrupted the Government messages shall be turned over to the Cuba Submarine Telegraph Company. For several months not one Porto Rican message, as shown by Washington records, has been transferred to the Cuba Submarine Telegraph Company. The messages between Habana and Santiago are usually handled in twenty minutes, including booking, copying, etc.

To perfect the general system the principle of alternative routes has been adopted, and fully three-fourths of all the Cuban stations can be reached by two different routes, thus maintaining telegraphic communication constantly even in the worst of weather. As an illustration of the present efficient service, Colonel Dunwoody states that at a few moments' notice the commanding general at Habana can be put in direct communication with any body of troops in the island. The problem of direct communication between Habana and Santiago, which was never possible under Spanish management, has been thoroughly solved, and the ordinary business between Habana and Santiago is now carried on direct. Messages are transmitted ordinarily with one set of repeaters at Puerto Principe, which in very bad weather is supplemented by a second set at Santa Clara. Every effort has been made by Colonel Dunwoody to locate errors, with a view to the elimination of incompetent and indifferent employees.

It should be said that the reconstruction, repairs, and additional work in connection with the system has been done under very great difficulties. Railway facilities were extremely limited, and unfortunately the greater part of the work lay to the east of Santa Clara where the use of a railway was not possible. Most of the work was done over country where the use of wagons was impracticable, so that the slow and tedious methods consequent on the use of pack trains were necessitated. In certain sections of the country iron poles have been used, especially where a wood line was subject to destruction owing to the burning over of cultivated fields.

The very great advantages that have arisen from the military telegraph system to the Cuban public are plainly evident. Not only are many points now reached which were before without telegraphic communication, but at the most important coast points the cost of the service has been very greatly reduced. This is illustrated by the fact that the Cuba Submarine Telegraph Company has reduced its Habana-Santiago tariff from a minimum charge of $2.50 a message, for a minimum of ten words, to the minimum charge of 50 cents per message, based on a minimum of five words. The military telegraph system has, however, made no attempt to solicit business, and has established an amicable and satisfactory working arrangement with the Cuba Submarine Telegraph Company for the joint handling of telegrams between military and cable lines.

The commercial rate from Washington to all points in Cuba beyond Habana ranged from 44 to 94 cents per word prior to the Spanish-American war. Any point on the island beyond Habana can now be reached over the military telegraph lines by commercial messages at rates varying from 22 cents per word, at a minimum, to 26 cents maximum.

There is a gradual increase in the commercial business, which will undoubtedly grow with the revival of industries. As an illustration of this may be noted the fact that the receipts for August, 1900, amounted to $6,031.58, being an excess of $2,429.30, or 42 per cent, over the receipts for the corresponding month of 1899. There were handled during the year 345,470 messages, about equally divided between governmental and commercial messages. There have been collected as "this line" receipts for commercial messages sent during the fiscal year $57,062.04, and there was transferred to cable companies for commercial business done by them, for which the Signal Corps received the funds in trust, $20,433.55. As the value of the governmental business to different points in the island aggregates $134,974.86, the grand aggregate of business done amounts to $212,470.45.

The direct benefits that have accrued to the military administration by the reconstruction and extension of military telegraph lines in Cuba have been many. As an illustration may be quoted the communication of Lieut. Col. Eugene T. Wilson, commissary of subsistence of volunteers, Department of Santiago, who says:

> It gives me great pleasure to testify to the great aid afforded the commissary department in the Department of Santiago by your rehabilitation of the telegraph lines in this department.
>
> Before we had telegraphic communication, on account of long distances by water over which the mails passed and the slowness of transmission of mail by pack train, great difficulty was experienced in packing emergency orders for distant points. Ships would come in bringing mail with tremendous orders for commissaries, which would have to be shipped on the return of the same steamer. Now I can call up all supply points in this department by telegraph and find out how they stand in the matter of rations.

As an illustration of the benefits which have been derived by the United States from the Signal Corps military telegraph system in Cuba, it is to be pointed out that not only is the service more satisfactory than ever before, but that there is an enormous reduction in telegraph tariffs. The United States now pays only 1 cent per word for each Government message sent from Washington to Porto Rico, or from Porto Rico to Washington, as against a tariff of $1.17 per word which was in force until long after the termination of the Spanish-American war. The Western Union Telegraph Company made a great concession to the United States by abandoning the cable rate from Key West to Habana and handling Government messages from Washington to Habana at 1 cent per word. At the same time the West India and Panama Cable Company conceded to the United States the privilege of gratuitous transmission of official messages between Santiago and Porto Rico. The minimum charge of the Cuba Submarine Telegraph Company of $2.50 for messages of ten words between Habana and Santiago was obviated by the Signal Corps telegraph lines.

Data are lacking for a statement of the exact sum saved during the past fiscal year by the United States through the reduction of tolls thus made on Government messages sent to Porto Rico via Signal Corps lines in Cuba. It appears, however, that during the last quarter of the fiscal year ending June 30, 1900, the War Department alone exchanged with Porto Rico official telegrams amounting to 11,080 words. The tolls on these messages at the rate which obtained prior to the Spanish war would have amounted to $12,963.60, whereas the tolls on messages via Signal Corps lines through Cuba amounted only to $110.80, a difference of $12,852.80 for three months alone or about $50,000 annually.

At the end of the year, exclusive of the officers, the total force in the Signal Corps telegraph system numbered 333, divided as follows: Enlisted men, 58; American employees, 40; Cuban employees, 235, the latter forming more than 70 per cent of the entire force.

The Chief Signal Officer of the Army unites with Colonel Dunwoody in the special commendation of the officers and enlisted men of the Signal Corps and employees for the faithful and most effective manner in which they have discharged their arduous duties.

The accounts of the military telegraph lines pertaining to the commercial business have been regularly audited in accordance with the methods employed on the Signal Corps lines in the United States, which follows that used by the Western Union, Postal, and other prominent telegraph companies.

The final auditing of accounts indicates a most satisfactory condition of affairs, as on June 30, 1900, unadjusted accounts involved only the amount of $650.09, which unsettled balance was in process of settlement. The cable accounts for official cablegrams are settled by the Signal Corps, under Colonel Dunwoody's supervision, at Habana. He calls attention to the very great reduction in the amount expended for official cable messages which has followed the construction of the Signal Corps military telegraph lines in Cuba. It appears that the bill for January, 1900, was $3,609.55, while that for June, 1900, amounted to but $112.47 for Government telegrams from Habana to various points on the island of Cuba. The saving to the Cuban Government probably exceeds $40,000 annually.

The rates over military lines for commercial business are very moderate and vary from a minimum of 20 cents for ten words through less than four provinces to 50 cents for ten words where one passes through six provinces. A uniform rate of 1 cent per word has been accorded press telegrams between any points on the island.

The practice has been followed of discontinuing from time to time telegraph offices at which practically no business was done. At other points where for Government and other reasons telegraphic communication was necessary, the expenses of the offices have been reduced at such stations through cooperation with the postal department, and on June 30, 1900, there were no less than twenty-eight where this principle of cooperation was in practice to the financial advantage of both the postal department and the United States military telegraph service.

More or less trouble has resulted from the failure of contractors to put up lines in accordance with the specifications of their contracts; sometimes materials, sometimes methods, were defective. In such cases Colonel Dunwoody appears to have adopted such lines of action as have fully conserved the interests of the Government.

Colonel Dunwoody has carried out with excellent results the instructions of the Chief Signal Officer of the Army looking to the steady and gradual introduction of Cuban operators into the service of the military telegraph lines. Colonel Dunwoody reports that the Cuban operators now appreciate that a thorough education in American telegraph methods would be to their pecuniary advantage and that in many cases they have shown very marked improvement. Almost all the Cuban operators have acquired the ability to copy by the typewriter telegrams as received, and at present all telegrams of the military telegraph lines are delivered to the person addressed in a neatly typewritten form. Systematic efforts have done much to eliminate mistakes, which in the early days were far too frequent, and the stringent measures employed to discountenance careless work have resulted in the reduction of such errors to a very low percentage. The work of the Cuban linemen, under careful instruction and supervision, has gradually improved, so that a competent force of native Cuban linemen has been evolved. Through the opening of a telegraph school for operators, and by field training for linemen, Colonel Dunwoody has succeeded in assembling a very considerable force of Cuban employees competent for work in the different branches of the military telegraph service. As opportunity offers competent Cubans have been employed, and at the date of this report a very large percentage of the employees of that service are Cubans.

### CUBAN TELEPHONE SERVICE, ETC.

The military telephone service in the Division of Cuba has been very much improved, and the various exchanges have been remodeled on a plan conforming to the great changes made in this direction in the United States. The Habana exchange in particular has been thoroughly remodeled with the latest pattern of switchboard, and from it a service of the highest degree of excellence has been maintained throughout the year.

The telephone privileges in Habana, operated by the "Red Telefonica" Company, have been supervised, and the general results appear in Appendix 3, where are also to be found rules and regulations suggested by Colonel Dunwoody, and now in force, with the approval of the commanding general, for the installation and operation of the

Cuban electric-lighting plant, operating in the cities of Guanabacoa and Regla.

Among other works in the interests of the United States Army especially was the laying of a cable by the Signal Corps across the harbor of Habana, connecting the city proper with Morro Castle and Fort Cabana.

### CUBAN CABLES AND TIME SERVICE.

Colonel Dunwoody states that no part of the annual subsidy claimed by the Cuba Submarine Telegraph Company has been paid. The Chief Signal Officer, without questioning the validity and justness of this concession, agrees with Colonel Dunwoody in recommending that the payment be deferred until the form of government for the island of Cuba be definitely determined. There has been much correspondence in regard to this claim, but there seems to be no valid reason why it should be settled out of United States funds. It is a proper charge against either the island of Cuba or Spain, according to the final judgment passed on this case by the highest legal authorities.

Through the cooperation of the Inter-Ocean Cable Company, the Signal Corps has during the greater part of the year given throughout the island of Cuba time signals from Washington at 12 o'clock each day. In connection with this time service a time ball has been operated at Habana through cooperation with the captain of the port. During the year the Signal Corps has afforded facilities for time service for longitude work to the commanding officers of the U. S. S. *Vixen* and U. S. S. *Yankton*.

### DISPOSAL OF CUBAN LINES.

In his original instructions to Col. H. H. C. Dunwoody, the Chief Signal Officer of the Army informed him that he was to assume control and administration of all Government telegraph and telephone lines of the island of Cuba, which, having been the property of the kingdom of Spain, have passed into the possession of the United States for preservation and operation until further orders as to their disposition may be received from the President or directed by Congress. Colonel Dunwoody was instructed to pay especial attention, first, that the operation of these lines was performed with efficiency, honesty, and economy; second, to the installation and operation of such additional lines as might be necessary for military administration. It was pointed out to him that the lines to be occupied were not absolutely the property of the United States and that they were to be held in trust. It has been necessary, however, to spend directly large sums of the appropriations of the United States for the construction, repair, and operation of these lines, and indirectly for the pay of officers and men of the Signal Corps, who have performed the greater part of the technical and administrative duties connected therewith.

In this connection Colonel Dunwoody was requested to keep such data as would show clearly, when the time for the transfer of these lines was ordered by the President or directed by Congress, their previous and present condition. Doubtless Colonel Dunwoody has kept complete accounts of the construction of each line, together with notes as to the purpose for which it was built, so that when the question is raised as to the disposition of the lines, instruments, and material, or as to the withdrawal of the United States, this separation can be made with justice both to the United States and to Cuba. The general character of the changes is shown by a map published, in connection with Colonel Dunwoody's report, as part of the report of Maj. Gen. Leonard Wood, commanding the Military Division of Cuba.

As above stated, the policy has been followed of substituting Cuban operators and officials as far as they were competent and reliable. Under this policy the military force of the Signal Corps has been reduced in Cuba from 17 officers and 125 enlisted men on June 30, 1899, to 7 officers and 55 enlisted men of the Signal Corps on June 30, 1900. The reduction will continue from time to time as circumstances render it practicable.

It is believed that Colonel Dunwoody's efforts have insured that efficient, honest, and economical administration which it was the aim of the Chief Signal Officer of the Army to secure in connection with the reconstruction and maintenance of the Cuban telegraph system.

From time to time the idea has been broached that the work of the Army in Cuba consisted largely in the exploitation of Cuban resources for the benefit of Americans. The injustice to the United States of these misleading reports is shown by the administration of the military telegraph lines.

The Chief Signal Officer of the Army has personally examined the official appropriations made by Spain, at the expense of Cuba, for the maintenance of the old telegraph system, which was far inferior in its extent, operations, and efficiency to the Signal Corps system. While the amounts appropriated for telegraph purposes could not be determined from the official Spanish documents with exactness, yet in one year it exceeded the sum of $300,000 directly, while the general appropriations for incidental purposes for both post-offices and telegraph lines make it probable that the expenditures on the lines aggregated $400,000 per year. No data are available as to line receipts, which are said to have been small under the Spanish régime.

It is impossible to determine without great difficulty the amount of money spent by the United States out of its own Treasury for the reconstruction, operation, and maintenance of these lines, but directly and indirectly it must far exceed the amount paid from the Cuban treasury. All the instruments and far the greater part of the wire, insulators, and battery are the property of the Signal Corps.

Excluding the amount spent on the construction of new lines in Cuba during the past year, the demands upon the island funds amounted in round numbers to $160,000. If there is added to this amount the sum of about $76,000 which was spent building new lines, needed only for commercial business, the entire expenditure from the island funds will not exceed $235,000. It thus follows that, considering the decreased expenses and the enhanced line receipts turned into the Cuban treasury, the people of Cuba are profiting annually through the administration of the American Army to the extent of nearly $200,000 in the reduction of telegraph expenses alone, while, as stated above, the wire mileage has been largely increased, the facilities for business greatly improved, and the service made most efficient.

It appears that the cost of the Cuban telegraph system is largely increased by a continuance of the Spanish policy of maintaining many offices where the revenue does not equal the expenditures. There is naturally a reluctance on the part of the military authorities to curtail an existing service by withdrawing telegraphic facilities from villages which have enjoyed them for a series of years. An examination of the reports for the months of April to June, 1900, discloses that out of 82 telegraph offices there are no less than 25, over 30 per cent of the entire number, where the telegraph receipts average less than $10 per month.

### DEPARTMENT OF PORTO RICO.

The operations of the Signal Corps in Porto Rico are shown by the report of Maj. William A. Glassford, signal officer of volunteers, which is published as a part of the report of Brig. Gen. George W. Davis, commanding the department. There is attached, however, as Appendix No. 4 a statement showing the names of the stations, receipts, and other important data relative to the operation of the military telegraph system in that department.

The Porto Rican telegraph system, when received from Spain by the Signal Corps of the Army at the time of the transfer of the island to the United States, was in exceedingly bad condition, and could almost be likened to the oft-cited railway, which consisted of a streak of rust and a right of way. Through the energetic efforts of the signal officers and men under Major Glassford these dilapidated lines were speedily put in serviceable condition.

Perhaps a better judgment as to the Spanish telegraph system can be drawn from the statement made personally to the Chief Signal Officer of the Army by a prominent man, who has been for years in business in San Juan. He stated that in all that time his firm had never been able to send a telegram and receive in the same day an answer from Ponce, about 80 miles distant.

There were handled over the Signal Corps lines during the fiscal year 232,771 messages, of which more than one-half were commercial. Owing to the very low tariff, the cash receipts amounted only to $18,348.81. At the commencement of the year the telegraph lines aggregated 1,240.5 kilometers (about 775 miles) in length. Thirty-two offices were maintained, the maintenance and repairs being conducted entirely by the Signal Corps of the Army.

In this work of reconstruction the length of the lines have been materially reduced, so that the system on June 30, 1900, aggregated in length of wire as follows: Telegraph, 578 miles; telephone, 110 miles—aggregate, 688 miles.

Major Glassford is entitled to great credit for the energy and ability with which he had conducted the telegraphic and telephonic work in his department under conditions which might well have justified long delays, particularly in the restoration of the lines after their destruction by the cyclone. Lieut. Frederick M. Jones, signal officer of volunteers, has rendered efficient service as assistant.

In connection with the reconstruction of the lines, Major Glassford has reduced very materially the expense of their operation. At the end of the year the entire force engaged in the operation and maintenance of these lines aggregated 80, as against 184 in 1898, when the system was transferred to the United States. Even this small force is being gradually reduced.

Free use of the United States military telegraph lines on urgent public business has been accorded under regulations fixed by Brig. Gen. George W. Davis, commanding the Department of Porto Rico, to officers of the Army and Navy of the United States, to the governor of Porto Rico, the heads of civil departments, the magistrates and marshals of civil courts, to customs officials, postmasters, and others whose expenses for telegraphing would be a proper charge against the United States Treasury.

The Spanish system of lines practically passed out of existence on August 8, 1899, through the destructive cyclone, which prostrated the entire system so that there were not two offices on the entire island which were in communication by telegraph. Undaunted by this condition of affairs, Major Glassford immediately devoted his energies to the restoration of communication between the more important points by temporary devices and then set to work to construct an entire new system, in which obvious errors of location and construction were to be avoided. Lines from Ponce to Humacao, via Arroyo, and branches from Mayaguez to Las Marias, Aguadilla to Lares, and Aibonito to Barros have been thoroughly restored. Two new wires were stretched from San Juan to Ponce and a new single wire from Ponce to Mayaguez and from San Juan to Humacao. The lines from Lares to Utuado, Adjuntas to Arecibo, Manati to Morovis, and Bayoman to Corozal were abandoned as unimportant and inadvisable. There have neither been rebuilt nor repaired certain lines, utterly worthless for military purposes and uncalled for by commercial business, from Caguas to Comerio, Cayey to Ciales, and from Las Marias to Maricao. The lines along the French railway have been restored by that company, in accordance with the provisions of the concession under which the railway is operated.

Supplementary to the telegraphic and heliographic system, Major Glassford has established a military telephone service at San Juan, Cayey, Coamo, Aibonito, Muacao, Ponce, and Mayaguez. The central telephone exchange at San Juan connects all the principal offices of the Government and the residences of its chief officers. Its thirty-five separate telephone stations cover not only the city limits, but the suburbs of Santurce and Rio Piedras. Similar telephonic facilities for the military service are furnished at the other points named. It may be added that experimental work between San Juan and Ponce—85 miles—shows that, if necessary, the entire telegraphic system of the island could be replaced by a telephone service.

Major Glassford supplemented the Signal Corps telegraph system by a heliograph line between Fajardo Light and the Isla de Vieques, a distance of 18 miles, thus bringing this island in easy and direct relations with Porto Rico. Commercial messages are sent to and fro over this heliograph line. This substitute for a cable has proven most satisfactory, as there was but one day during the year when communication was impossible by heliograph.

It is to be especially noted that the military telegraph system of Porto Rico has been maintained, operated, repaired, and reconstructed without drawing a dollar from the treasury of Porto Rico. The expenses have been defrayed either from the appropriations for the support of the Army or from the line receipts. All money received for commercial messages since May 1, 1900—when the island was transferred to the civil authorities—has been turned into the United States Treasury, as is required by law in the case of commercial receipts of military telegraph lines in the United States.

### DISPOSAL OF MILITARY TELEGRAPH LINES IN PORTO RICO.

In accordance with instructions from the Assistant Secretary of War the Chief Signal Officer of the Army prepared on June 4, 1900, a report on the history, condition, and future prospects of the Porto Rican telegraph lines. This report was transmitted to the Hon. J. B. Foraker, chairman of the Committee on Porto Rico, and printed as Senate Document No. 429. It contains a map of the entire system, and copies of all accessible Spanish concessions and decrees relative to cables, telegraph, and telephone lines. It is as complete a history as could be compiled in the brief period permitted for its completion before the adjournment of Congress.

The Chief Signal Officer renews his recommendation that Congressional action be taken regarding the cable, telephone, and telegraph lines of Porto Rico.

Certain cable and telephone concessions granted by Spain are recognized as binding upon the United States, but there should certainly be legislation according the people of Porto Rico certain rights. Under suitable restrictions there should be authorized the construction and operation, by corporations or individuals, of telegraph, telephone, and cable lines, scrupulously respecting the concessions now in force. The Spanish law embodies sound principles in its provisos that telephonic concessions should accord privileges in a territory to be clearly defined, and that they should be granted by sale at auction to the highest bidder. Such concessions should, if possible, be nonexclusive, and certainly for a limited number of years, and should reserve certain free telephone service to the United States and the local government, and should further look to the transfer of the entire plant at the expiration of the concession to either Porto Rico or the United States. The Spanish law which prohibits any private individual from establishing telephonic or other communication, even on his own property, without incurring legal penalties should be modified. Private lines should be authorized under such conditions as will benefit individuals, coupled, of course, with proper restrictions in the public interests.

There is a diversity of opinion regarding the ownership of the Porto Rican telegraph system and its proper disposal. It would seem to be unquestioned that such lines as have been absolutely reconstructed by the Signal Corps of the Army, without expense to the treasury of Porto Rico, belong to the military establishment of the United States. As to other sections which have been practically reconstructed since the cyclone, almost entirely at the expense of the military establishment of the United States, there may be a question as to whether they belong to the military establishment, but certainly they were the crown property of Spain, as is clearly shown by papers attached to the report of the Chief Signal Officer in Senate Document No. 429.

Major Glassford's report shows that there has been paid from United States appropriations during the past year the sum of $46,712.74. This amount includes the pay, rations, quarters, etc., of the Signal Corps force, and is additional to the sum of $19,560.38 paid out for line expenses from the receipts from the lines prior to May 1, 1900, since which date all receipts have been turned into the Treasury of the United States. The total amount paid out on the lines exceeds $60,000, or $5,000 per month, while the receipts have been but $1,529.07 per month. The Chief Signal Officer of the Army estimates that the receipts for the coming year will aggregate about $24,000, which, unless otherwise directed by law, will be turned into the Treasury of the United States. It is believed that the expenditures, including the pay of Signal Corps men and officers and army disbursements of all kinds, will be about $40,000, against which there is an offset of only the United States and insular messages, which are transmitted free over these lines. To turn the system over to Porto Rico means at present the imposition of a heavy charge against its treasury of about $16,000 for the year even under the present economical methods, but in view of the fact that the old Spanish personnel exceeded by 104 employees the present force, it is probable that the deficiency, under a Porto Rican civil system, would be nearly double that amount, say somewhere in the neighborhood of $30,000 per year.

The Chief Signal Officer of the Army therefore renews his recommendation that this system remain temporarily as Signal Corps telegraph lines, pending an improvement in Porto Rican finances and the development of a telegraph system through private enterprise. As a Signal Corps system it would be subject to the same policy as has been followed for years in regard to other military lines, namely, their gradual abandonment and sale when no longer necessary in the public interests. The rule has been regularly followed by the Chief Signal Officer of recommending the maintenance of only such Signal Corps telegraph lines as are necessary for strictly military purposes.

It is pointed out that the maintenance of military telegraph lines will in no manner conflict or interfere with concessions for civil telegraph lines, which should be accorded as rapidly as private corporations may deem it advisable to construct and operate them. Should such telegraph concessions be made it is recommended that the privilege be sold at public auction, the Government to enjoy certain rights as to priority of messages and reduced tariff, and that in time of war the military authorities shall have such facilities and control as may be necessary in the public interests.

### CABLE AND TELEPHONE CONCESSIONS.

These subjects have been treated in full in the report published in Senate Document No. 429, and with the transfer of the Porto Rican government to civil officials the connection of the Signal Corps therewith terminates. It is to be stated, however, that both cable and telephone concessions are valuable, and that questions connected therewith are worthy of careful consideration by Congress. This is particularly true as regards the relief of commercial business from the very high cable tariffs that have so long existed on messages between Porto Rico and the United States.

### SIGNAL CORPS OPERATIONS IN THE PHILIPPINES.

It is impossible for the Chief Signal Officer of the Army to convey by this brief résumé an adequate idea of the work of the Signal Corps in the military division of the Philippines during the past fiscal year. It is also to be said that so important and extensive have been the duties devolving upon the insufficient force of signal officers and men that time has been lacking to make complete reports of all operations. The same plan is followed this year by the Chief Signal Officer as in the past fiscal year, by adding to the annual report an appendix, No. 5, in which appear such extracts of reports of Lieut. Col. James Allen, Signal Corps, received under paragraph 1541, Army Regulations, as are of special interest or permanent value.

It fell to the lot of Maj. Richard E. Thompson, Signal Corps, and his successor, Lieut. Col. James Allen, Signal Corps, to initiate, construct, operate, and maintain a system of military telegraph and telephone lines which as to their importance, extent, and efficiency have no equal in the history of warfare. Major Thompson was relieved on December 20, 1899, by Lieut. Col. James Allen, the former returning, with health impaired by his arduous field duty of eighteen months, to Washington, where he has since served as an assistant to the Chief Signal Officer. The Chief Signal Officer of the Army can not commend in too high terms the ability, energy, and professional skill of these officers.

It should be stated in justice to Maj. Gen. Wesley Merritt and Maj. Gen. E. S. Otis that they at all times accorded the fullest possible assistance to Major Thompson in all of his Signal Corps work. As to the present commanding general, Maj. Gen. Arthur MacArthur, it is to be recorded that while a division commander he recognized from the very first the indispensability of telegraphic and telephonic communication for success in warfare. In one of his reports he says:

> As a means of tactical control wire service in the hands of trained, skillful, and fearless men may be regarded as an indispensable adjunct of modern war, in which light it is a great privilege to speak in behalf of the future development of the Signal Corps of the regular establishment to the full limit of essential military usefulness.

Upon assuming command of the military division of the Philippines General MacArthur immediately called the attention of the Secretary of War to the extreme military value of extended telegraph and cable facilities throughout the Philippines, indicating most strongly his opinion that an efficient and economical military control of the Philippines could be accomplished with a limited force only by the adjuncts of cables and telegraph lines.

It should be said that the Secretary of War promptly recognized the cogency of General MacArthur's statements, and that he has furnished the Chief Signal Officer of the Army from the emergency war fund such allotments as will secure at an early day a comprehensive telegraph and cable system. It will cover all the islands of importance in the Philippine group and extend over more than 1,000 miles of latitude, from Seno de Bangui of northern Luzon to the southerly island of Jolo.

Indeed, it may be added that the efficient work of the Signal Corps in the Philippines has only been possible through the action of the President in increasing to a suitable number the temporary force of the Signal Corps under the act of March 2, 1899, and through the cordial support of the Secretary of War in promptly according the Chief Signal Officer of the Army every means necessary for this work. In addition, the military committees of the House and Senate have cheerfully recommended in each and every case the full amount of the estimates submitted by the Chief Signal Officer of the Army.

It seems advisable at a time when the various staff bureaus of the Army have been subject to attack, to recognize the efficient and valuable services rendered the Signal Corps, especially by Adjutant-General Corbin, Quartermaster-General Ludington, Acting Commissary-General Weston, and Surgeon-General Sternberg. Neither in this fiscal year, nor at any time since the beginning of the Spanish-American war, has the Chief Signal Officer of the Army ever had official differences with any of these bureau chiefs, nor has he ever been denied the most cheerful and fullest assistance, even under conditions trying to these officers.

Recurring to the practical work of the Signal Corps in the Philippines, it is to be added that on June 30, 1899, there were in existence only 139 miles of telegraph line which connected division headquarters with the various garrisons and outposts on the island of Luzon. On June 30, 1900, there were in existence no less than 3,475 miles of Signal Corps land lines and cables. This increase in the mileage does not fully indicate the extent of the work done. During field operations it became necessary to construct temporary flying lines, which were necessarily recovered or abandoned as circumstances required when the field force was withdrawn temporarily. In addition there have been many instances in which very considerable stretches of line were destroyed in provinces temporarily abandoned, or through regions illy guarded. In connection with General Lawton's famous march through untraveled eastern Luzon, when Major Thompson performed the remarkable feat, deemed impossible of accomplishment, of keeping Lawton in daily communication with the commanding general at Manila, there were about 100 miles of line constructed, of which fully 75 miles were necessarily abandoned and the rest recovered by Captain Russel and his efficient command. It thus followed that there were constructed during the year 803 miles of field lines which are no longer in existence. This makes the entire telegraph construction during the fiscal year ending June 30, 1900, aggregate 4,278 miles of land lines and cables, an average of 12 miles per day, Sundays and holidays included.

On June 30, 1900, there were in operation 3,007 miles of telegraph lines and cables, with 406 telegraph and telephone offices, of which no less than 301 connected directly with the headquarters of the commanding general at Manila.

While it transpires that the only satisfactory military system of communication is by telegraph, where there is a written record of messages transmitted, yet the scarcity of skilled telegraphers has rendered it necessary to operate many short lines by telephone, and there are now efficient military telephone exchanges at Manila, Iloilo, Cebu, Jolo, Cavite, Bohol, Santa Cruz, and other important points.

In Appendix No. 6 is a statistical table showing the work of the Signal Corps. It appears that the total number of messages sent and received during the year aggregated 1,481,040, of which very nearly two-thirds, 961,704, were sent from January to June, inclusive. The maximum was reached in June, when no less than 186,287 messages, containing 2,500,000 words, were transmitted by telegraph.

### FIELD OPERATIONS.

The principal Signal Corps assistants of Maj. Richard E. Thompson and Lieut. Col. James Allen in field work were Maj. George P. Scriven, Capt. Edgar Russel, and Capt. Daniel J. Carr, from whose reports extracts appear respectively as Appendices 7, 8, and 9.

Colonel Allen recommends in the highest possible terms the ability, efficiency, and professional skill of these officers, upon whom have devolved an enormous work which has been performed in a manner eliciting praise from all commanders with whom they have served.

### MACARTHUR'S DIVISION.

Capt. Daniel J. Carr's Signal Corps command participated in the following engagements, skirmishes, etc., reference being made to General MacArthur's division unless otherwise stated:

August 9, 1899, advance on Sindalin and Calulut.
August 16, 1899, in the vicinity of Angeles.
October 12, 1899, advance on Arayat.
October 16, 1899, defense of Angeles (night attack).
November 2, 1899, advance on Porac.
November 5, 1899, advance on Pandicaqui and Mabalang.
November 8–24, 1899, northern advance from Angeles to Dagupan, Bamban, Capas, and Murcia.
November 10–20, 1899, capture of San Fabian and advance on San Fernando de la Union, with General Wheaton's expedition.
December 1–15, 1899, General Grant's advance Angeles to Orani.
December 5–10, 1899, Colonel Hood's advance on Norzagaray and vicinity.
January 31, 1900, San Narciso, Zambales.
February 1, 1900, Lieutenant Stamford's party attacked near Subig, Zambales.
February 18, 1900, Lieutenant Lenoir's party attacked near Botolan, Zambales.
April 6–9, 1900, Colonel Smith's advance on Macabulus near Mayantoc, province of Tarlac.

Captain Carr's report (extracts in Appendix 9) covers the following notable operations of his command: On August 9 a signal detachment accompanied MacArthur's advance on Sindalin, behaving, under Lieutenant Gibbs' efficient supervision, with coolness under fire and handling all field messages promptly. During the night of August 17, in compliance with General MacArthur's urgent demand, Lieutenant Gibbs and men built, between 8.30 p. m. and 2 a. m., under great difficulties and in a terrible rainstorm, a field line from Sindalin to Angeles, just captured. November 2 and 3 a detachment accompanied Col. J. F. Bell when he dispersed the insurgent cavalry and, opening an office at Porac immediately upon the beginning of the action, notified General MacArthur of the situation. In Col. Jacob Smith's advance on and capture of Magalang the Signal Corps was three times under fire. On one of these occasions the operators, opening their office on the firing line, coolly sent and received messages while the enemy's bullets whistled over their heads. Colonel Smith, in his report, said:

> The Signal Corps, under Capt. Daniel J. Carr, rendered service that was marvelous in its benefits, and I can not speak too highly of his work in keeping the lines of telegraph in perfect touch with me all the time.

In the advance under General MacArthur's personal direction on November 11 an office was opened in the field at the center of the attack, and at the hand of the commanding general; and in the forward movement an office was opened in Bamban by wire carried across the river on the men's backs.

On November 12 Captain Carr, while advancing toward Capas, was attacked by insurgents in ambush. Though armed only with revolvers he returned the fire, put his men under cover, and held his ground until relieved by Gen. Joseph Wheeler. Later, the same day, after opening an office at Capas and clearing General MacArthur's business, Captain Carr moved with Colonel Bell's command and was again under fire at Murcia. During that day the detachment marched farther than any other body of the army, 16 miles, from Bamban to Tarlac. Moreover, it built that length of field line, and, never losing touch with

Bell, cut in an office at Murcia to notify MacArthur that the place was captured. Moving on, MacArthur was notified of their success within five minutes after the occupation of Tarlac. It was long after midnight when the work of telegraph reports permitted the Signal Corps to rest, but Captain Carr says: "The willingness and enthusiasm of the men at their work are worthy of remark."

On November 17 the crossing of the flooded river, a mile wide, was accomplished through the resourcefulness of Lieut. William Mitchell, who built a bamboo raft while the army necessarily waited for the river to fall. On this was ferried over, not only the line material, but also two push cars extemporized from old car wheels and logs. These push cars proved of great value in the advance along the railroad. After a hard day's march the Signal Corps were called on by a courier from MacArthur, just as they were going to bed, with orders to put a wire at once into Moncada. Despite extreme darkness and rain the line was extended to and an office opened in Moncada shortly after 1 a. m., when all business with Manila was immediately cleared. On November 20, no operator being available, Captain Carr, accompanying General MacArthur on a reconnoissance, cut in a field office near Dagupan, and sent messages to General Otis under conditions which elicited complimentary notice from MacArthur.

Captain Carr credits Lieutenants Lenoir, Mitchell, Stamford, and Duffy with surmounting more difficult problems than fell to his immediate command. Of Lieutenant Mitchell he says:

> His boundless energy and practical and theoretical knowledge of line work were put to severe strains, but he met every difficulty in a most creditable manner.

Particularly notable were Lieutenant Mitchell's successful efforts in opening communication between Lawton's command at San José, Nueva Ecija, and MacArthur's division at Bautista de Bayambang, uneasiness being felt as General Lawton had not been heard from for several days. Captain Carr, personally reconnoitering the route for some distance, and finding that possibly it was feasible, put Lieutenant Mitchell into the field November 28, and in four days he had built a line to Lawton's headquarters, the intervening obstacles serving only as incentives to increased energies on the part of the men.

Captain Carr commends Lieutenant Stamford's ability and energy in connection with his work during General Grant's advance from Angeles to Orani, and Lieutenant Stamford's success in handling his command when attacked by insurgents north of Subig.

Lieut. Charles M. Duffy won great credit from Captain Carr for his successful work in northwestern Luzon, near Vigan, where his detachment was frequently harassed by incursions of insurgents along the lines. During March they did much damage to his lines. It was only by tireless effort that Lieut. Richard O. Rickard has maintained the Appari line in the sickly, hostile, and mountainous country north of Solano.

Lieut. Basil O. Lenoir's work is considered "especially noteworthy" in the construction of lines along the west and northwest coast of Luzon. At times the presence of a large insurgent force entirely suspended operations, and on frequent occasions his camp was fired into by insurgent scouts. On January 6, 1900, his party was attacked near Botolan by an insurgent force double his number. Assistance was summoned from Botolan, but before its arrival the insurgents withdrew after three-quarters of an hour fighting, during which time two of Lenoir's men were wounded. Lieutenant Lenoir, in connection with General Wheaton's expedition against the insurgent force near San Fabian, constructed a platform in a high tree top and established and maintained uninterrupted communication with the navy for a number of days by heliograph, flag, and flash light. Carr says:

> No more striking instance of good judgment, ingenuity, and application has been exhibited in the work of the Signal Corps than on this occasion.

Lieutenant Gibbs' work in connection with cavalry operations near Norzagaray January 5–10 are interesting, both from the fact that he handled heavy No. 9 wire, the only kind available, with such dispatch as to keep in touch with the cavalry, and also from the successful operation by a vibratory (buzzer) kit of 13 miles of naked No. 9 iron wire laid in muddy, wet roads. In a reconnoissance northeast of Norzagaray, Gibbs found and destroyed an insurgent line which had served to connect San Miguel and San Mateo.

A most important duty of Captain Carr's command illustrates the versatility and ability of the American soldier. This was the establishment and operation of a train-dispatcher's service on the railway between Manila and Dagupan. The trains were many and ran at first entirely as extras, thus making the service important and exacting. The duty was performed with entire satisfaction and no accident of any kind occurred in connection with the dispatcher's service. Later a formal train service and time tables were established by Signal Corps men.

### LAWTON'S DIVISION.

Capt. Edgar Russel Signal Corps (Appendix 8), served with very marked distinction as signal officer to Maj. Gen. W. H. Lawton's division. That lamented officer before his untimely death expressed his great admiration for the extraordinary success which had uniformly attended Captain Russel's efforts to keep him, on each and every expedition, in communication both with the detached units of his command and also with General Otis' headquarters at Manila.

In General Lawton's famous flanking march in October, 1899, from San Fernando to Arayat, Arayat to San Isidro, San Isidro to Cabanatuan, and Cabanatuan to San José, Captain Russel displayed in a conspicuous degree those qualities of resourcefulness, energy, courage, and professional skill which have gained him such warm commendation from his commanders in the field. This march through a practically unknown country was under adverse climatic conditions, at long distances from the base of supplies, while the transportation facilities were thoroughly inadequate, yet Lawton was kept in communication with Manila until he changed his base to Tayug.

Captain Russel was ably seconded by First Lieut. Mack K. Cunningham, signal officer of volunteers, whose courage and skill have won him frequent commendation, justifying his promotion to the grade of a commissioned officer, which was the outcome of gallant service at the capture of Manila as a sergeant of the Signal Corps.

The opinion of General MacArthur as to the value of field telegraph work is shown by the indorsement made by him as a division commander, in which he says:

> As a factor of usefulness in the present posture of affairs, the importance of an unlimited supply of signal material and telegraph operators can not be overestimated.

The extent of Captain Russel's operations may be judged from the fact that during the year his command constructed 953 miles of land lines and aided in the laying of 112 miles of cable.

Captain Russel notes the splendid heroism and unflinching devotion to duty of his Signal Corps command, especially in the severe fighting around Imus and Baracoa on October 2, and in connection therewith urges suitable official recognition of Lieut. Mack K. Cunningham for efficient field service and gallantry in action, and commends for coolness and bravery enlisted men who are named in Appendix No. 10.

Captain Russel commends the excellent work of Lieut. Walter L. Clarke in connection with the Schwan expedition south of Baracoa from October 6 to 13, which received the special commendation of Gen. Theodore Schwan for the gallantry, energy, and success with which Clarke operated the flying telegraph lines during the campaign.

The extensive field operations of Generals Bates and Schwan in January, 1900, taxed Captain Russel's resources and material to the utmost. Captain Russel considers worthy of note the close communication kept with the rapidly moving columns of Generals Bates and Schwan, the Signal Corps detachment never losing touch with them.

In connection with these operations there occurred a notable illustration of the resourcefulness and ingenuity which in the Philippines has not infrequently been necessary to supply deficiences at critical periods. There being no light wire, either naked or insulated, for these rapidly moving columns, Colonel Allen suggested the use of untwisted armor wire from the copper-covered river cable, and, by an ingenious method of untwisting and reeling devised by Sergeant Bohler, 40 miles of small copper wire, No. 21, were obtained. What is perhaps more notable, the widely separated commands were kept in communication over 30 miles of this naked copper wire, which was worked by the Signal Corps vibratory (buzzer) kit for about a week, during which time the wire lay naked on the ground.

Lieut. Frank E. Lyman, jr., rendered efficient service with General Bates' expeditionary force in the Camarines, and later displayed marked energy and ability in the repair and construction of 110 miles of line in this province, where the disturbed conditions of the country made work difficult and dangerous.

Lieut. Neils P. Yurgensen has performed excellent work in connection with the repair and maintenance of the system of military cables in Laguna de Bay. Lieut. William W. Colt has done most efficient service in connection with the transportation and supplies of the corps.

Second Lieut. John Kennedy performed with praiseworthy energy the especially difficult task of reconstructing, with the efficient aid of Lieut. Clifton R. Berry, the Antimonan-Guinayangan line. There were great natural difficulties to overcome and long distances had been destroyed by ladrones. The line was a necessity as insuring with the Guinayangan-Pasacao cable communication between Manila and southern Luzon.

Of important miscellaneous work performed under Captain Russel's direction may be mentioned the establishment in September and the subsequent operation of the system of distributing standard time, that of the one hundred and twentieth meridian, through Luzon and the Visayan Islands as far as Cebu. This important work was rendered possible through the cooperation of the officials of the Manila Observatory through the courtesy of the Eastern Extension Cable Company.

Of greater practical importance was the installation by Lieut. Henry Hathaway of an observing and signaling station on the summit of Corregidor Island, whereby the military authorities and others interested are promptly advised of the movements of shipping.

The handling of the immense quantity of material necessitated by the extensive operations of the corps in the Philippines during the past year imposed labors of an arduous character upon the property and disbursing officer at Manila, First Lieut. W. O. Bailey, and to the strenuous exertions of this efficient officer is due in large measure the prompt placing at the front of supplies necessary for field operations of the corps.

### VISAYAN ISLANDS.

While operations on the islands of Panay, Negros, Cebu, Leyte, and Samar were not made in the face of as active and strong a force of insurgents as marked the work in Luzon, yet they have involved dangers, hardships, and difficulties.

In carrying out these duties in the earlier part of the fiscal year First Lieut. Leonard D. Wildman displayed unusual ability and skill in their prosecution.

When Maj. George P. Scriven assumed command of the work, continuing Lieutenant Wildman in the field, he planned a service of communications commensurate with the military needs of the department. Aided cordially by Gen. Robert P. Hughes, the commanding general, Major Scriven has shown great executive ability in pushing the system as far toward completion as circumstances would permit. Portions of Major Scriven's valuable report form Appendix 7.

There have been constructed in this department during the year 901 miles of line. Of this, 306 miles of telegraph and telephone line are in Panay, operated by 16 telegraph stations and 36 telephone stations. The maintenance of the lines in Panay, through a hostile country with an inadequate force of Signal Corps men, is at best difficult. The success in establishing and maintaining communications is largely due to the efficiency, zeal, and bravery of Lieutenant Wildman and the enlisted men under him. The construction of the line by Lieutenant Wildman between Iloilo and Capiz, through a country already ravaged by ladrones, who continued active in harassing the Signal Corps force, made the work one of privation and danger. Similar conditions involved the construction of the line between Jaro via Santa Barbara to Pototan, the insurgents ambushing the trains and raiding the towns during the greater part of the year.

Major Scriven says:

> Lieutenant Wildman, in addition to his marked ability as a mechanical engineer, has shown energy, executive ability, and interest that are unusual, and deserving of the highest commendation.

First Lieut. Charles S. Wallace had ample opportunity to display the qualities of courage and professional skill which have marked his previous career. His work in building the eastern line between San Jose and San Joaquin met with resistance from the ladrones and insurgents from start to finish, the rugged nature of the country facilitating potting, and almost daily he and his necessary escort were under fire. Major Scriven reports that—

> Lieut. Charles S. Wallace has been almost constantly in the field in the enemy's country since last December. His services have been of unusual value. He is cool in danger, energetic, eager for work, and endowed with thorough professional knowledge.

In addition to his excellent service in charge of the construction of lines on the island of Negros, First Lieut. Alfred T. Clifton accompanied General Hughes's column on its march to Capiz and later to Romblon. His varied duties have been performed with ability, and discretion. Through his indefatigable efforts there are now 152 miles of land lines on the island of Negros. Major Scriven says:

> First Lieut. Alfred T. Clifton has done well in Negros, considering his small force. Condition and extent of his lines, second in mileage to Panay, are commendable. In the field he has shown great activity and energy.

On the island of Cebu First Lieut. William E. Davies, Volunteer Signal Corps, has performed most excellent service in connection with the construction, operation, and maintenance of lines on that island. 137 miles in length. Lieutenant Davies, in January, took part as commander of the advance guard in the action on Languyon River and the destruction of Mount Amai trench and adjacent insurgent fortifications. Of him Major Scriven reports:

> First Lieut. William E. Davies has shown great activity, not only in ordinary work, but against the enemy in the field. He is a faithful, energetic, and hardworking officer, very capable in his position.

### ENLISTED MEN OF THE SIGNAL CORPS.

The Signal Corps, to a greater extent than any other corps in the Army, depends for its standing and efficiency on the intelligence, character, ability, and zeal of its enlisted men. In this respect the Signal Corps of the Army has been fortunate, as it numbers among its rank a very large percentage of men of the highest character. It is not often that severe disciplinary methods have been necessary; desertions are almost unknown and grave breeches of trust extremely rare. Unusual care has been exercised in the selection of recruits, and as a rule the men have justified the moral recommendations which they were required to furnish by excellent deportment, intelligent service, devotion to duty, and personal valor. Save the latest recruits, every man has seen foreign service, which has been admirably performed, whether in isolated Alaska, storm-stricken Porto Rico, the yellow fever districts of Cuba, the arid plains of China, or among the Philippine insurgents.

While service in other localities has been arduous and severe, yet interest naturally centers with the men on active campaigning. Allusion has elsewhere been made to the strenuous efforts and service of the Signal Corps detachment in China, which, however, embodies a very small part of the corps.

It is in the Philippines, in the face of an active and treacherous enemy, that the versatility, ability, and skill of the Signal Corps men have had the fullest scope.

As to their accomplishment, Lieut. Col. James Allen especially mentions them in direct connection with his officers, commending their fidelity and valor as meriting future consideration from the executive and legislative branches of the Government. He recites that in many instances where the military interest demanded it, in cases where otherwise important telegraph offices would have been closed, the enlisted operators of the Signal Corps have continued in charge and handled the enormous volume of official telegraph business when their physical conditions were such that they should have been under medical treatment in the hospital. Indeed, it may be said that everywhere operators are overworked, being on duty from twelve to fourteen hours daily. At times in the field they have worked from eighteen to twenty hours when important military operations demanded.

Capt. Daniel J. Carr expresses his high appreciation of the excellent manner in which the men of his command performed their usual arduous and important duties, and says:

> The major portion of such credit as belongs to the Signal Corps for work in the Department of Northern Luzon is theirs.

Maj. George P. Scriven says:

> In regard to the enlisted men of the Signal Corps, I believe it is not too much to say that so fine a body of men is seldom brought together, and that their efficiency, energy, and steadiness have been remarkable. Intelligent and well instructed, they have shown a keen interest in corps work, and far from needing a spur have required a check to keep them from continuing on duty when broken with long and arduous service in the field. The men, constantly in the midst of a treacherous enemy, working at times through dense jungles, always intolerable heat, and frequently in drenching rain, have shown an energy and spirit worthy of the highest commendation.

The Signal Corps is called a noncombatant corps, and service therein is frequently spoken of as nonhazardous. That it is extra hazardous, when the Signal Corps is efficiently handled in the field, is shown by records of the past year in the Philippines, where its percentage of strictly war casualties, "killed, wounded, and captured," far exceeds that of the Army as a whole. With an average force of only 302 men there have been killed, wounded, and captured in active operations 12 men, or 4 per cent of the entire force. Five others have been wounded under conditions not yet reported, thus making the entire percentage of killed, wounded and captured 5.7 per cent. On the other hand, the loss by disease, only 3, or 1 per cent, illustrates the high order of intelligence whereby these men avoided the most fruitful causes of disease, for it must be understood that wherever the line of the Army was there was also the Signal Corps.

While the limits of this report permit only rare allusions to the gallantry of the enlisted men, yet the services of this character are made of record, too briefly perhaps, in Appendix 10.

The Chief Signal Officer of the Army and his subordinates have endeavored to recognize ability, valor, and character, and all promotions to sergeancies and first-class sergeancies have been made absolutely and strictly on merit, as determined by the immediate commanding officer of the men. This recognition has not been confined to the enlisted grades, but has been recognized in the promotion to officers. Of the 14 promotions to second lieutenants of the Signal Corps made during the year, every one, without exception, has been the outcome of competition through a board of officers, the best man being invariably commissioned. Not only have 14 first-class sergeants been promoted to be second lieutenants and signal officers of volunteers, but 4 Signal Corps sergeants have been commissioned in other volunteer organizations.

Acknowledgement should be made for the volunteer service of Second Lieut. Max Wagner, Twenty-sixth Infantry, who acted as signal officer during an auxiliary expedition to Capiz. Lieutenant Wagner's services were admirably performed, and he displayed the courage and energy which marked his career until his untimely death a few days since.

### FLYING FIELD LINES.

The telegraph lines of the Signal Corps have been of two classes, the field lines and permanent lines. The Signal Corps field lines were employed for keeping the headquarters of the various cooperating expeditions in communication with each other and with the commanding general at Manila. It is to be stated that with but one or two exceptions, where intercommunication was not requested, no field operations have been conducted in the Philippines without the adjunct of a Signal Corps field line following closely its line of march, and on several occasions carrying the flying telegraph into captured towns with the firing line.

The field lines were laid upon the ground, bushes, or trees, and operated by field kits of the Signal Corps, whereby, as opportunity required, these lines could be used either by telephone, by telegraph, or by vibratory (buzzer) method. As opportunity offered or circumstances demanded the field lines were replaced by semipermanent constructions on bamboo or soft-wood poles. It is to be added that within a few months such poles fall, either through decay or through the destructive action of ants.

### PERMANENT LINES.

Wherever continued service was required permanent telegraph lines have been constructed on hard-wood poles in accordance with modern methods. The system of permanent lines is shown on the attached progress map of Signal Corps lines and cables in the military division of the Philippines, Appendix 17, which has been corrected to July 1, 1900. The main features are a line from the extreme southern end of Luzon (Albay) to Manila, whence two lines extend to the extreme northern end. One follows the valley of the Pampang, crossing the divide and continuing on down the valley of the Cagayan to Aparri, the other to Dagupan and thence along the northwest coast to Bangui. There is also a line covering the west coast from Bolinao south to Subig and another stretching from Manila along the Laguna de Bay to Batangas. The stations on the southwest coast in the vicinity of Manila in Cavite province, and, indeed, nearly every garrisoned station on Luzon, are connected by wire with department headquarters. In Panay the headquarters Department of the Visayas at Iloilo are connected by a line covering the entire southern and eastern coast as far as San Jose de Buena Vista, while a second line traverses the east central portion of the island to Capiz on the north coast, a side line branching at Dumarao and reaching the east coast at Ajui. On the island of Negros the northern and western coasts are covered by a line extending from Escalante through Bacalod to Jimamaylan. There is also a short line on the southeast coast extending from Bais to Dumaguete. On Cebu a line extends along the greater part of the eastern coast from the extreme southern cape through the town of Cebu to Danao, with an east and west branch across the island from Sibonga to Dumanjuc. On Bohol the western, southern, and eastern coasts are skirted by a line extending from Tubigon in the northwest to Ubay on the northeast. The island of Bohol, pending the arrival of additional Signal Corps cable, is kept in communication with Cebu by heliograph stations at Loan on Bohol and Arggao on Cebu. Cebu is also connected with the island of Leyte by a Signal Corps cable to Ormoc. A land line extending across the island of Leyte connects with a Signal Corps cable spanning the strait between Leyte and Samar. It is to be added that construction work, of which no report has been received, was progressing at the end of the year on Bohol, Leyte, and Samar.

The construction and repair of all lines, either field or permanent, required incessant watchfulness and constant efforts on the part of the Signal Corps. Lieutenant-Colonel Allen well says that—

> The repairing has been a work of great hardship and personal danger. During the year 4 men have been killed, 2 missing, either killed or captured, 4 captured, and 2 wounded in action. Two native linemen have been killed and 2 wounded.

### MANILA TELEGRAPH AND TELEPHONE OFFICE.

Among the striking evidences of American progress in the Philippines is the central military telegraph and telephone office of Manila. There center twelve local city telegraph offices and the complicated system of land lines, which through 301 offices connect the commanding general directly with every district of Luzon. In the telephone exchange are installed twenty-one separate lines reaching, by a modern hundred-drop metallic switch board, the thirty-three military stations and eleven city telephones, which, under the terms of the Spanish concession, are placed at the disposal of the Government by the Manila Telephone Company. The telegraph system centering in Manila is now worked by dynamos and storage batteries which, through the professional skill and resourcefulness of Capt. Edgar Russel, Signal Corps, whose report thereon forms Appendix No. 11, have replaced the costly wet-battery system originally in use. This change alone effects an economy yearly of about $2,000. The dynamo furnishing power is nearly half a mile from the central office. All telegrams are received by typewriter. A new modern American 50-strap switch board, fitted with cords, jacks, etc., facilitates greatly the work of the office, which at times reaches nearly 2,000 messages per day. The latest types of oil engines, general electric dynamos, chloride accumulators, galvanometers, Wheatstone bridges, condensers, voltmeters, and atmeters furnish power and means for working, testing electric lighting, etc., so that the Manila office stands scarcely second to-day to any commercial telegraph office of like capacity. In the establishment and operation of this elaborate system Captain Russel acknowledges the valuable technical services of Lieutenant Hathaway, and Sergts. Walter R. Taylor, Fred. W. Bohler, and Frank E. Peters, all of the Signal Corps.

### COMMERCIAL TELEGRAPH BUSINESS.

Recognizing the importance of fostering the development of trade and the restoration of business conditions, the military telegraph lines of the Philippines have been thrown open by Lieutenant-Colonel Allen to the transmission of public business, subject, however, to such restrictions as the commanding generals at various points may deem necessary to impose in the public interest. The tariff charges are most moderate, being 2 cents per word between stations in the same island, and 4 cents per word between stations on different islands.

The first steps in this direction were taken in the Department of the Visayas by Maj. George P. Scriven, under the authority of Brig. Gen. Robert P. Hughes. The regulations covering these transmissions and a list of telegraph and telephone stations in operation may be found in Appendix No. 12.

There was received in the Department of the Visayas during the months of February, March, April, and May, 1900, the sum of $402.09 United States currency for commercial messages handled over these lines.

### MILITARY CABLES IN THE PHILIPPINES.

The only commercial cable facilities in the Philippines are those of the Eastern Extension, Australasia and China Telegraph Company, from Manila to Iloilo, 322 knots; from Iloilo to Bacolod, Negros, 25 knots, and Iloilo to Cebu, 167 knots.

The necessity of an alternative cable route to the Visayan Islands, foreseen and advised from the beginning by the officers of the Signal Corps, was evident to everyone when the commercial cable between Manila and Iloilo was broken on May 1, 1900, and was not repaired until the end of the month, thus interrupting all telegraphic communication between Luzon and the rest of the archipelago.

The military system was initiated by the Chief Signal Officer of the Army in a cablegram to Maj. Richard E. Thompson, Signal Corps, signal officer, Division of the Philippines. Major Thompson promptly devised a system and submitted it to Major-General Otis, then commanding general, who as promptly approved it.

The Chief Signal Officer then had constructed in the United States 212 miles of deep-sea cable, which was sent to Manila on the United States transport *Hooker*. This amount was supplemented by other shipments of a lighter copper-armored cable, which proved most valuable in establishing a cable system in Laguna de Bay and other points, where under existing disturbed conditions land lines could neither be constructed nor maintained.

The *Hooker* arrived in Manila on June 26, 1899, with her cable in perfect order, a competent staff on board, and suitable machinery for surveying and cable laying and cable repairing. Conditions do not appear to have been favorable for cable work, for on August 11, after six weeks' delay in Manila Harbor, the *Hooker* was sent to Hongkong to coal and was shipwrecked on an outlying reef of Corregidor Island. Unsuccessful efforts to float her were made by the Quartermaster's Department, which had entire charge of her at the time, and the ship became a total loss.

Maj. Joseph E. Maxfield, Signal Corps, who was detailed to conduct the cable operations, bent his energies to wrecking the submarine cable, of which large amounts had been necessarily thrown overboard in efforts to save the ship, and also to recover the cable-laying machinery and equipment. Through his energetic and resourceful means the machinery and equipment were recovered in good condition and nearly all the cable. Much of the cable, however, was in very bad shape, necessitating a large amount of work for its recovery and proper repair by splicing. When recovered in October and November, 1899, facilities for laying the cable were lacking, and it was not until April, 1900, that Colonel Allen was afforded means for laying the cable. Indeed, experts in Manila believed that the exposure, after its recovery, of the cable to the intense heat of the climate had made it unfit for use. Colonel Allen says:

> Portions of the cable were strained by the handling received during recovery, and the insulation resistance lowered from exposure, but all of it had been working satisfactorily since its submersion.

Maj. Joseph. E. Maxfield, Signal Corps, reports (Appendix No. 13) the successful laying of 149 miles of the recovered cable during the year.

After a survey of the northwest coast of Cebu, Major Maxfield fixed on Liloan as the most suitable point for cable landing. The approaches to this point were carefully surveyed, and later a hydrographic survey was made of the route to Ormoc, Leyte, soundings being made every 5 miles. Major Maxfield's survey showed that much of the hydrographic data of Spanish charts are unreliable.

The vicissitudes to which it had been subjected, especially its numerous splices, made the work of laying this cable most difficult, and it was necessary to pick up cable already laid, cut out the damaged portions, and make new splicings on no less than three occasions. The cable laid and in good working order in May, Major Maxfield immediately connected Tacluban, on Leyte, with Samar, and a third cable was laid between Liloan and Cebu. These cables have continued constantly in good working order, and have been of incalculable value in military administration.

Major Maxfield commends especially the knowledge and skill of Messrs. Strubel and Winter, cable engineers, to whom the success of the work was largely due.

Major Maxfield laid the following other cable during the fiscal year: In July, 1899, in Laguna de Bay, from Caiamba to Taguig; in January, 1900, in Laguna de Bay, from Taguig to Binang, and also from Los Baños to Santa Cruz. Through these extensions only was it possible to maintain uninterrupted communication with the country to the southwest of Laguna de Bay. In June, 1900, he also laid a cable between Naic and the island of Corregidor, thus bringing in direct communication with Manila the great hospitals and the Signal Corps marine station. The most important cable work, however, was that done by Major Maxfield in May, 1900, in connecting Pasacao and Guinayangan, a work which necessitated unusual care, owing to the bad condition of the cable laid and the large number of splices therein. This line is of the greatest possible value from a military standpoint, as it brought for the first time the very important and disturbed provinces of the Camarines of southern Luzon in direct communication with division headquarters at Manila. Efforts had been made to construct a telegraph line from Atimonan overland to Nueva Caceras, but the strong insurgent forces and the difficult character of the country made it impracticable. By this cable the very great difficulties of installation and maintenance in connection with a land line were avoided. Direct communication has thus been maintained continuously between Manila and Albay.

The cable experiences of the Signal Corps, both in Cuba and the Philippines, bear testimony to the efficiency of American cables, especially for war purposes, wherein are involved rough work, severe treatment, and at times inadequate facilities for the care of the cables. On this point Colonel Allen says:

> The sterling properties of this type of cable, both electrical and mechanical, reflect extraordinary credit upon the American manufacturer, and, taken in connection with the history of similar cable laid during the Spanish war, would seem to settle conclusively that for military purposes cable with a properly constructed rubber insulation is the best type that can at present be designed. Had this cable been insulated with gutta-percha, twenty-four hours of exposure would have rendered it entirely worthless.

### PROJECTED CABLE WORK IN THE PHILIPPINES.

The long interruption of the English cable, between Manila and Iloilo, Visayan Islands, yet prevailed when General MacArthur assumed command of the military division of the Philippines. He then found himself able to communicate promptly with only the troops on that part of the island of Luzon northwestward of the Camarines. The important Visayan Islands, Mindanao, and the Zulu group were reached only by slow and tedious method of mail, so that in some cases important military events were a month old before the information thereof reached Manila. General MacArthur immediately urged, by cablegram, upon the War Department the necessity of establishing a comprehensive cable and telegraph system, which would bring within his telegraphic reach every important military garrison in the Philippines.

The Chief Signal Officer of the Army had long considered this subject, and through the timely action and wise prevision of Maj. Richard E. Thompson and Lieut. Col. James Allen had prepared a plan covering the entire islands. Moreover, the Chief Signal Officer was able to state with close approximation the expense and time involved in this work, which must be considered one of the most important factors in the pacification of the Filipino Archipelago. The Secretary of War, considering the subject carefully, promptly approved the construction of the system which had been recommended both by General MacArthur and the Chief Signal Officer of the Army. Demands for extended telegraph facilities had already compromised the greater part of the annual appropriation, and for this purpose an allotment was made from the emergency appropriation.

In general the plan unites all the principal islands, and looks to the establishment of alternative routes to points of the greatest value in military administration.

From Jolo, of the Zulu group, a cable will extend to Zamboangu, Mindanao. The rest of this great island will be served by cables on the south coasts from Zamboangu to Tucuran and Tucuran to Cotabato, while a land line from Tucuran crosses the island to Misamis, whence there will be a cable extending east to Rigan.

Mindanao itself will be connected with the island of Negros by cable from Misamis to Dumaguete, which in turn connects Negros with Cebu by cable to Punta Tañon. The islands of Cebu and Bohol will be united by cable between Cebu and the most suitable landing near Punta Cruz. Cebu and Masbate have been already united by cable, as well as Leyte and Samar. To connect Samar with the existing lines in Luzon there is being built a land line from Pansiguican to Calbayog, whence a cable will extend via the east coast of Masbate to Donsol on southern Luzon, which is now reached from Manila by land lines through the Camarines. The entire system should be in working order in January, 1901.

As a result of bids, the construction of this cable was awarded to the Safety Insulated Wire and Cable Company of New York. The entire work of testing, outfitting, and laying the cable was intrusted to the personal supervision of Capt. George O. Squier, whose previous work in connection with the development of cable engineering has insured him an international reputation.

Meanwhile the transport *Burnside* was detailed to carry and lay the cable to the Philippines. The ship was not available until July, when the Quartermaster's Department found it necessary to make very material repairs before sending her upon so long a voyage.

Most stringent orders were given by the Chief Signal Officer of the

Army to Captain Squier that no work connected with the cables should be done upon the ship which would delay its departure an hour, as transportation of small lots of rubber cable are readily made by commercial steamers. Despite every exertion on the part of the Quartermaster's Department it was not possible to dispatch the *Burnside* until September 26, when she sailed for Manila with 559 miles of deep-sea cable on board. It is to be understood that the Signal Corps of the Army has no control of the *Burnside*, which, as in the case of all other transports, remains entirely under the supervision of the Quartermaster's Department. Captain Squier's authority extends only to stating the point to be visited by the *Burnside* in her cable work in the Philippines. Under such conditions, which is a general rule in the Army, technicai work must necessarily be done under those disadvantages which always arise from a divided responsibility.

As it was evident that the completion of the repairs of the *Burnside* would delay for considerable time the sailing of the vessel, the Chief Signal Officer sent through the Quartermaster's Department, by commercial steamer, 50 miles of cable, which arrived in Manila late in September, thus relieving somewhat the extremely urgent demand for cable extensions.

When the *Burnside*, now en route, reaches Manila, Captain Squier will report to Colonel Allen for instruction as to the points between which the cable will be laid. Had it not been for the extent of the repairs demanded by the condition of the *Burnside*, it would have been safe to say that every military garrison of any size in the Philippines, from the extremely northern point of Luzon southward to the Jolo-Zulu group, and eastward to Samar, would be in telegraphic communication with each other by January 1. It is hoped that in any event this very important work will be completed by the end of January.

## INTERNATIONAL CABLE REGULATIONS.

In connection with the proposed American-Pacific cable, the Chief Signal Officer calls attention to the fact that the whole subject of the rights, privileges, and immunities of submarine cable property in time of war has been brought to notice during the Spanish-American war, and should properly be a matter of consideration for an international cable conference. Such a conference for the protection of submarine cables was held at Paris in 1884, and its proceedings transmitted to Congress by a message of the President under date of January 9, 1899, were subscribed to by the United States and by twenty-five other principal nations of the world.

Article XV of this conference, however, specially states that "the stipulations of this convention shall in no wise affect the liberty of belligerents," which article leaves this important property in time of war without adequate international laws to meet the complicated cases which are certain to arise.

In view of the present enormous projected extension of submarine cable service throughout the world, aggregating in the British Empire alone an estimated cost of $30,000,000, such a conference could properly consider other international cable matters. Among them is the formulating of a standard international cable code to replace numberless codes now in use. A single code constructed on scientific lines would materially increase the working capacity and efficiency of submarine cables. It should avoid words liable to telegraphic error, whether transmitted by the European or American alphabet, and those which badly transcribed lead to errors in reading. By selecting suitable code words the speed of code messages could be increased from 20 to 30 per cent with equal or improved legibility.

### AMERICAN TRANS-PACIFIC CABLE.

In order to more closely unite the United States and its Pacific colonies, it is essential to span the Pacific by a submarine cable, as recommended by the President to Congress in his special message of February 10, 1899.

It is only a matter of time when Luzon shall be connected with Japan and China, which would insure an independent connection between the Philippine Islands and the Asiatic mainland, which is now only available telegraphically over a short cable of about 600 miles of the Eastern Extension Company, where the charges are three times as great as between the United States and Europe, being 75 cents per word from Manila to Hongkong.

The cable experiences of the War Department in connection with the relief of the legations at Pekin point clearly to the tremendous disadvantages under which the United States, without its own cable facilities, would labor in case of an extended war in the East.

An American trans-Pacific cable is a military and commercial necessity if our colonial possessions are to be retained or if American interests are to be safeguarded in Asiatic countries. The great value of such a cable is more especially for the fostering of industrial interests in the new colonies and in order to facilitate commercial operations.

Inasmuch as it is officially known that an American cable can only enter Japan from the east, and not from Russia, China, nor the Philippines, the only possible route is that already recommended to Congress by the President, via Hawaii and Guam.

In connection with cable operations in Cuba and the Philippines the Signal Corps has had practical experience in the construction, installation, and operation of cables such as has never been enjoyed by any other body of officers and men, outside of the few experts of the great cable corporations of the world.

In the telegraphic operations of the Signal Corps since the commencement of the Spanish-American war have been involved about 1,000 miles of cable, nearly one-half the amount necessary to connect San Francisco and Honolulu. In cable matters, as in all other technical construction, the Chief Signal Officer follows the wise rule of relying on the skill, judgment, and experience of the experts of the great manufacturing establishments, thus securing successful installation by experts whose lives are given to technical work. In Cuban and Philippine waters during war conditions it was necessary for Signal Corps officers to do the entire work. The officers of the Signal Corps have been most fortunate in their operations, as not a single mile of cable has been lost, either in laying or recovering, nor has their been any serious interruption in the working of these cables. Cable accidents are not infrequent among cable experts, as illustrated by the misfortune of the contractor now engaged in laying the Alaskan cables, whose operations are delayed through faults of navigation by the grounding of their ship.

Three officers of the Signal Corps, Lieut. Col. James Allen, Maj.

Joseph E. Maxfield, and Capt. George O. Squier, have especially applied themselves to acquire knowledge regarding the electrical and other physical constants of submarine cables, the best methods of operation, the lines along which invention is advancing cable operations, and other data relative to this subject. The successful efforts of these officers has enabled the Chief Signal Officer of the Army to bring together a collection of data that must be of great value and importance to such officers of the Government as may be charged either with the construction, laying, and operation of such cables or the supervision of the work if done by contract.

It is to be added that the trans-Pacific cable should be thoroughly American in its manufacture, installation, and operation.

### INTERNATIONAL TELEGRAPH CONVENTION.

The next international telegraph conference is to be held in London in 1901, and it is most urgently recommended that the United States adhere to the International Telegraph Union, and that steps be taken by Congress to authorize the War Department to join and be represented thereat.

While under the regulations any State may adhere to the convention on request, and may renounce its adhesion, yet nations not belonging, such as the United States, can only submit its views through a proposal, which views must be seconded by one of the contracting States, conditions which are incompatible with the dignity and standing of this nation.

As compared with the contracting States the United States is now at a distinct disadvantage in the use of cables and land lines which pertain to the union. In time of war, or in serious exigencies, the United States has to yield in priority of its official telegraphic messages to the official messages of agents of all contracting States, as under the regulations telegrams of contracting States take precedence.

The International Telegraph Union furnishes gratuitously the contracting States all information relative to international telegraphy, such as interruptions, restorations, etc., and the United States has been obliged for years past to obtain such valuable information second-hand and as a favor, if at all. The expense of the maintenance of the International Bureau is borne by the different States, and would probably not exceed a few hundred dollars per year for the United States. The amount could be paid from the telegraphic expenses of the Signal Corps if authority is given, or the expenses could be met, as in other countries, by an additional charge of 1 cent on each message over United States lines, as was regularly done in Cuba, Porto Rico, and the Philippines. Prior to the Spanish-American war Porto Rico and the Philippines participated in the advantages of this union, and there seems to be every good reason why they should continue to adhere, especially in view of the fact that foreign cables reaching these islands conform to the regulations of the International Telegraph Union.

### WAR DEPARTMENT TELEGRAPHIC CODE.

Under the provisions of General Orders, No. 9, Adjutant-General's Office, January 16, 1899, the Chief Signal Officer of the Army has prepared a telegraphic code for the official use of the Army.

The extraordinary telegraphic expenses to which the War Department has been subjected in late years made this a work of great importance. The conditions were such that the preparation of this work devolved upon the Chief Signal Officer personally, this resulting from the fact that the performance of this work required a practical knowledge of telegraphy, combined with a thorough familiarity of the necessities of the service, of special vocabularies, and also of cable regulations and methods throughout the world.

In the preparation of the permanent "War Department Telegraphic Code" very great care has been taken to omit words which, either in the Continental Code or American Morse, are of such telegraphic character as to lead to errors, whether in the transmission of cipher messages or from defective transcription. As an outcome there has been printed and distributed to the Army the "War Department Telegraphic Code," which is supplemented by the "Western Union Telegraphic Code." From time to time appendices have been issued, as the code is not yet in its perfected condition. It has, however, at present over 20,000 sentences that are more or less frequently used in military correspondence. On an average each cipher word represents about seven words in plain text. The necessity for economy is apparent when cablegrams to the Philippines cost $2.25 for each word, including address and signature.

Specially prepared tables reduce the length of official messages to a minimum. In connection with certain classes of business a single word acknowledges the messages and conveys to the sender the action taken thereon. Every officer in the regular establishment has a single code word assigned to him, and the same course is followed with each separate military organization. For instance, the code word "nettarhine" means "Company A, Twenty-fifth Regiment United States Infantry," and the word "novercabor" means "Your requisition of 21st received and will be filled immediately."

The code word "krausbart" means "With reference to your telegram of the 28th, your recommendation approved," and the word "kreuzen," "With reference to my telegram of the 19th, take no action until further orders."

While primarily a code for economical purposes, yet the War Department telegraphic code is so arranged that it can be used for enciphering important confidential messages where secrecy is desired. Each code word has a number, so that any method of enciphering by key numbers can be readily used, either simple or complex.

## EXPERIMENTAL WORK.

The policy pursued by the Chief Signal Officer of the Army, in the past, of conductingexperimental work along lines of prospective value to the Signal Corps in time of war, has naturally been intermittent in the face of military conditions demanding the utmost effort in the field by every available officer and man. Such attention, however, has been given as was possible in the brief intervals that could be spared from active campaigning, especially in directions promising early usefulness for field operations.

Among work that has produced excellent results is that connected with wireless telegraphy. The Signal Corps has perfected its own system, and it is of interest to record that the Signal Corps system was the first one ever successfully operated in the United States. As is well known, to Mr. Marconi's inventive genius and persistent application are due the demonstration of the practicability of this system to the civilized world. Prior to his extensive work at the expense of the New York Herald and in connection with the international yacht race, the Signal Corps on September 30, 1899, had operated its own system successfully between Fire Island and Fire Island light-ship, a distance of about 10 miles. In April, 1900, it opened two stations in New York Harbor, where messages were passed daily to and fro between Governors Island and Fort Hamilton. This work, originally undertaken by Lieut. Col. James Allen and Capt. George O. Squier, later passed to the hands of Capt. Samuel Reber, signal officer, who, with the assistance of Mr. Carl Kinsley, has made many improvements and advancements which reflect credit both upon Mr. Kinsley and Captain Reber. As an outcome there have been established and are now in successful operation two stations in San Francisco Harbor, one at Fort Mason and another at Fort Alcatraz. Arrangements are being made looking to the establishment of stations in the Philippines at suitable points.

The Chief Signal Officer remains of the opinion, expressed in a previous annual report, that this system will have its limitations, and that such limitations are not entirely dependent on distance alone.

Experimental work has also been conducted in connection with automobiles, of which three with electricity as a motive power have been purchased by the Signal Corps. One has been sent to the Philippines with a view to testing it practically in the field. While the conditions of the Signal Corps are such as to render the use of electrical power most advisable, yet owing to the difficulty of recharging the batteries in the field it seems probable that a portion at least of army automobiles must be those dependent on another motive power than electricity.

A portable field electrical signal light has been designed and constructed on lines indicated by a board of Signal Corps officers. In addition to its primary use as a signal light it will also serve as a search light. The lines of construction are such as to insure efficiency of action, economy of power, and readiness of transportation, all essential qualities for active campaigning; and as regards these qualities, it is believed that the light produced is equal, if not superior, to any light of this character in the world. The Signal Corps signal light and searchlight now in use in the Philippines can be readily transported, is easily mounted at any point so that it can be used for searching battlefields for dead and wounded, or as a screen for intrenching operations at night, or for reconnoitering purposes on armored trains, or for columns in the field. One carriage carries the motor for producing the electric light, while the other carries the light proper, so that the plant is readily transported over roads of almost any character.

Extensive experiments have been made in the Philippines with a view to determining the value of acetylene gas for visual night signaling. The acetylene light in conjunction with the heliograph forms the means by which communication has been kept up in the Philippines between the islands of Cebu and Bohol, while similar methods have made practicable communication between the islands of Vieques and Porto Rico.

### TELEGRAPH AND CIPHER BUREAU OF THE EXECUTIVE OFFICE.

At the beginning of the Spanish-American war it was found necessary to reorganize the force and increase the facilities of the Telegraph and Cipher Bureau of the Executive Office to meet the demands of the situation and to place the Commander in Chief of the Army and Navy in quick and direct communication with the forces on sea and land and with our diplomatic representatives abroad. This was done under the immediate supervision of Capt. Benjamin F. Montgomery, a most capable and zealous volunteer officer of the Signal Corps, who was placed in charge of this most important and confidential branch of the Government service. Speaking of this direct communication with the Government at Washington, the President, in his annual message of December 5, 1898, said: "This service was invaluable to the Executive in directing the operations of the Army and Navy."

Captain Montgomery's work in this department has steadily increased since the reorganization. This bureau is the central office of a vast system of telegraph and telephone lines, which, by simple methods and a perfect system of wire connections, is made most useful to the President, and served to keep him in touch not only with every Executive Department of the Government but within prompt and easy reach of every part of our own and other lands. All cipher dispatches of the various departments are received over direct wires from the cable offices and translated by Captain Montgomery for the information of the President, while urgent and pressing business is communicated promptly—direct to its destination—without loss of valuable time and liability to error, so often occasioned by delay at intermediate points. There is a day and night force, so that the office is never closed to business.

Twenty-five telegraph wires, several of which are duplexed, and fifteen telephone cables connect the Telegraph and Cipher Bureau with the departmental lines of the Government and with commercial companies of the country. Including a few months prior to the reorganization, and up to October 31, 1900, this office handled 453,765 telegraph messages—a large portion of which were of a confidential character and in different codes of cipher.

### SIGNAL CORPS EXHIBIT AT PARIS EXPOSITION.

The Chief Signal Officer of the Army found it impossible to spare an officer of the Signal Corps for duty with the Paris Exposition. By special directions such an exhibit of the instruments and work of the corps was made as was possible under the circumstances.

Fortunately for the interests of the corps, its exhibit was placed under the efficient charge of Lieut. H. C. Poundstone, United States Navy. It is a gratification to acknowledge the interest and skill displayed by Lieutenant Poundstone in the arrangement and description of the work of the Signal Corps, and doubtless it is due to his efficiency that the "grand prix" was awarded to the Signal Corps.

### DISBURSING AND PROPERTY DEPARTMENT.

Capt. Eugene O. Fechét was the disbursing and property officer of the Signal Corps during the past fiscal year. In his report, which forms Appendix 14, is a general statement of receipts, disbursements, and of the principal shipments during the year.

The Signal Corps material in the Philippines and in China, for which there have been so many urgent demands by cable, has been purchased, inspected, and shipped, under Captain Fechét's supervision, with an accuracy and dispatch that speak most highly of his executive ability. He has proved a most valuable assistant to the Chief Signal Officer of the Army through his resourcefulness and business efficiency. His money responsibility alone aggregated during the year nearly $1,000,000. It seems only proper to suggest that an officer serving as a disbursing officer of the Signal Corps should receive the pay of a major. Certainly the efficient performance of such duties merits that compensation.

### ESTIMATES.

The estimates for the fiscal year ending June 30, 1902, $243,796, are necessarily tentative, but they have been based upon the assumption that present conditions would not materially change and that the Army would consist of 100,000 men.

These estimates show a reduction in the expenditures of the Signal Corps as compared with the fiscal year 1899-1900 and 1900-1901, for which the expenditures are estimated, respectively, at $275,000 for the first named year and $685,000 for the last named year. The appropriations of $231,000 for the fiscal year ending June 30, 1901, was supplemented by an allotment from the war emergency fund, act March 3, 1899, for the Philippine cables, of which about $44,000 was spent. For the present fiscal year the appropriations of $97,000 for the usual Signal Corps expenses was supplemented by $450,550 for the Alaskan telegraph system. To this must be added the sum of about $238,000 remaining for the Philippine cable system of the allotment from the war emergency fund above alluded to.

The construction of an extensive telegraph system in Alaska and the great extension of the Philippine lines necessarily demand increased appropriations for their maintenance and operation. In addition to the ordinary expenses of the corps, which are estimated at $192,500, there are incorporated $51,296, to enable the Signal Corps to carry out the duties devolving upon it in connection with the installation, operation, and maintenance of electrical communications connected with the fire control of the coast artillery. This work, of an absolutely indispensable character for war purposes, can not with safety be delayed until hostilities actually occur. It is needless to state that the artillery can not have practice drills assimilating war conditions unless the very extensive and costly guns are placed in electrical communication.

It should be stated that the expenditures connected with the military telegraph and cable lines in Cuba are very largely met from the receipts of the Cuban lines, which, it is understood, are reappropriated from the insular funds in Cuba. The expenses, however, connected with the duties of the signal officers of the varions departments and all installations for artillery posts and other military stations in Cuba are met from the appropriation for the Signal Corps.

All expenses of any character in Porto Rico are met from the appropriations of the Signal Corps, and the same is practically true of the Philippines as far as is known to the Chief Signal Officer of the Army.

### OFFICE OF THE CHIEF SIGNAL OFFICER.

Contrary to anticipations, the clerical work of the Signal Office has not diminished in volume during the past fiscal year. It was hoped that when the vast amount of correspondence and other clerical work incident to the discharge of the volunteers and the reenlistment of an entire new corps was completed, the amount would decrease materially. Such, however, has not been the case, and the extension of the operations of the Corps to Alaska make it evident that the work for the coming year will be, if anything, in excess of that for the past year.

In the recruiting of a Signal Corps of 800, the enlistments, transfers, and changes in the personnel of the corps have caused a large amount of correspondence which, owing to the technical qualifications required of applicants, has necessarily been transacted through this office. These changes also involve much work in the keeping of the card records of the officers and enlisted men.

The work of examining and auditing the money accounts and property returns has continued enormous, but has been lessened and facilitated by the introduction of a card index and envelope system to replace book entries and old method of filing.

The insanitary condition of the rooms occupied by the Signal Office, as pointed out by the Chief Signal Officer in his last two annual reports, has in no way been relieved, and while the number of clerks has remained very nearly the same, the changes during the year, seven in number, made in so small a force, has greatly added to the difficulty, as the new clerk in each instance has had to be instructed in the work allotted to him.

The same cheerfulness and willingness to work has continued, and no one has availed himself of the full amount of leave allowed him by law. The promotion of Mr. Otto A. Nesmith to be chief clerk and of Mr. George A. Warren to a clerkship of class 4 have been proper awards for faithful and efficient service of many years.

The present office force can not be reduced without injury to the public service and the consequent neglect to its business. It is to be sincerely hoped that the next Congress will provide a permanent force, so that each clerk, feeling secure in his position, will take more personal interest in the work to which he may be permanently assigned, as under the present system and its repeated changes and the uncertainty of permanency it is impossible, however capable a clerk may be, to accomplish the same work as under permanent conditions.

The following permanent clerical force is absolutely necessary for the proper performance of public business in the Signal Office: One chief clerk, at $2,000; 1 clerk, class 4, at $1,800; 1 clerk, class 3, at $1,600; 2 clerks, class 2, at $1,400 each; 3 clerks, class 1, at $1,200; 5 clerks at $1,000 each; 2 clerks at $900 each; 1 clerk at $840; 1 messenger at $840, and 2 assistant messengers at $720 each.

### VOLUNTEER SIGNAL OFFICERS.

Most fortunately, the commissioned force of volunteer signal officers has suffered but few changes during the year. The only casualty is that of Second Lieut. James B. McLaughlin, an able and regretted officer, who distinguished himself in the campaign in Porto Rico, and who died of yellow fever in Santiago, Cuba, July 6, 1899.

Two officers have returned to civil life, feeling that the exigencies of the public service no longer demanded sacrifices consequent in army service:

First Lieut. Ambrose Higgins, a valuable and competent officer, resigned August 15, 1899.

Second Lieut. Charles O. Pierson, who rendered valuable professional services in connection with the telegraphic work of the War Department, resigned April 30, 1900.

These vacancies have been filled by the promotion of first-class sergeants of the Signal Corps distinguished for their efficiency and courage in foreign service.

## PERSONNEL OF THE CORPS.

The commissioned force of the Signal Corps has been changed by the retirement on December 1, 1899, of an officer of the corps, Lieut. Col. Robert Craig, who was retired on the recommendation of a retiring board for physical disability, and by the transfer to fill this vacancy of an officer from the line of the Army.

Under the regulations such vacancies are filled by a combination of selective and competitive methods. The competitors are selected from officers less than 30 years of age, who have served at least two years as officers of the line. They are first obliged to pass a satisfactory examination as to their physical condition and are then examined upon theoretical and practical electricity, modern languages, chemistry and optics, military survey and reconnoissance. Such arrangements are made that all candidates are examined under conditions insuring absolute impartiality. In addition to this examination the candidate is required to furnish an essay on a military subject, his military fitness for the Signal Corps is considered, and his official record is obtained from the Adjutant-General of the Army. The records are then examined carefully by a board of Signal Corps officers, who, previous to this examination, have determined the weight which shall be given to the different subjects. The candidate standing the highest is then recommended for transfer to the Signal Corps. Owing to the widely separated stations of the Army this examination, for which six officers made application, required nearly eight months' time for its completion, and, as a result, the candidate having the highest standing, First Lieut. Edgar Russel, Sixth Artillery, was recommended for transfer, which was formally made August 30, 1900.

In order to give future candidates an opportunity of judging the scope and character of the examination, the questions on electrical subjects used in the last examination form Appendix No. 16.

## REORGANIZATION OF THE SIGNAL CORPS.

The present organization of the Signal Corps is entirely unsatisfactory, it being deficient in the number of regular officers and men, while it also lacks proper organization for its enlisted men.

In its reorganization the Chief Signal Officer of the Army desires not only to urge the system best calculated to insure, in an electrical age, efficiency in the electrical branch of the United States Army, but also to recognize the services performed by volunteer officers of the Signal Corps who, it is believed, have demonstrated very thoroughly their ability as a body to do their part in waging war successfully—the object for which an army is organized and maintained. In this connection he unites with Lieut. Col. James Allen in calling particular attention to the volunteer signal officers in the Philippines, and quotes the language of that very able officer in speaking of the services of these officers which, "characterized by valor, fidelity, and ability, commends them to the Executive Department and Congress for future appointments and legislation."

In his recommendations the Chief Signal Officer of the Army recognizes as desirable a close association between the Signal Corps and the line of the Army, and consequently favors the same system of organization as obtains in the Corps of Engineers—a system and organization whose efficiency has been such that neither the Executive Department nor Congress urges their reorganization.

Whatever may be the merits of the proposed detail system, its application to a highly technical organization, such as should be the Signal Corps of the Army, has proved fruitless, as shown by the records for the past thirty-five years. In the quarter of a century prior to 1891 this system obtained entirely in the Signal Corps, which gained in the Spanish-American war not one signal officer from the 35 regular officers of the line then on the active list, who had acquired their signal instruction under detail with the corps. Likewise the mixed system since 1891 has proved its inefficiency in every way, it being noted that out of 1,600 supposedly trained men there were but 25 competent recruits for the Signal Corps, and out of 400 supposedly trained officers there were obtainable only 5 willing and capable to do the technical work of signal officers in the field.

It should be emphasized that this is an electrical age, and that any army which fails to utilize to the fullest the telegraph and telephone, as well as the heliograph and the electric light, will be at a serious disadvantage with its opponents.

The reorganization of the corps is based not on a continuation of war service, but to meet continuing demands, the supposition being that the Regular Army will hereafter consist of 75,000 men.

The existing systems of telegraph lines and cables are so extensive as to make certain demands upon the Corps whether the Army is large or small, but the Chief Signal Officer only asks for a working force of officers and men whose numbers shall be such that they can look for duty in the United States one year out of three.

For convenience the Chief Signal Officer draws up his recommendations in technical form in sections:

First. The Signal Corps of the Army shall hereafter consist of 1 brigadier-general, 2 colonels, 3 lieutenant-colonels, 4 majors, 14 captains, and 14 first lieutenants, who shall have the rank, pay, and allowlowances of mounted officers.

Second. The disbursing officer of the Signal Corps shall be a bonded officer, and if below the grade of major shall receive, while so serving, the rank, pay, and allowances of a major.

Third. The original vacancies created by this act shall be filled—

(1) By promotion through seniority of the officers of the regular Signal Corps, under examinations as now required by law;

(2) By either competitive examination or by selection on their military record from volunteer Signal Corps officers who, since April 21, 1898, have served efficiently in the Signal Corps;

(3) From officers of the line of the Army, by competitive examination, as provided by existing regulations, provided that no officer shall be appointed to the Signal Corps of the Army until he shall have been examined and approved as to his moral, mental, and physical fitness

by a board of regular officers, of whom a majority shall be signal officers, and the proceedings approved by the Secretary of War.

Under the above organization the distribution of the field officers would naturally be as follows:

Alaska, 1; assistant to Chief Signal Officer of the Army, 1; Porto Rico, 1; Philippines, 3 (5 are now needed); Signal Corps Post, 1; signal officer Department of the East, where the entire artillery fire-control work centers, 1; signal officer, Department of California, where the Pacific fire-control centers, 1.

Ten captains and 10 first lieutenants would serve with companies, leaving only 2 captains and 2 first lieutenants for special duties as signal officers of departments.

Fourth. The enlisted force of the Signal Corps shall hereafter consist of 10 companies, 1 sergeant-major, 1 quartermaster-sergeant, 1 commissary sergeant, and 1 saddlery sergeant. Each company shall consist of 6 sergeants of the first-class, 12 sergeants, 12 corporals, and 30 privates, who may be either of the first or second class, and 1 cook, who shall receive the pay and allowances now provided by law; and the enlisted force of said companies may, in time of war, insurrection, or other emergency, in the discretion of the President, be increased to not exceeding 90 men, the ratio of noncommissioned officers being preserved, provided that officers of the Signal Corps serving with these companies shall have the rank and command as serving in the line of the Army.

The experiences of the past year have demonstrated the great necessity for company organization, and the Chief Signal Officer of the Army has been obliged to organize the corps into companies for administrative purposes, although such action is not specifically recognized by law, and officers of these companies receive no pay for such commands. The lack of such an organization has been felt, particularly in the Philippines.

The number of noncommissioned officers may seem too large, but experience has demonstrated to the contrary. Competent men can not be induced either to enlist for or remain in the corps as telegraphers and electricians without having hope of speedy advancement. Under the law every telegraph operator handles money in considerable sums, as received for commercial business done over the military lines. The enlisted force must consist largely of intelligent men of character, technical training, and professional knowledge.

It is recognized that this is a radical change in making the Signal Corps, in a manner, a part of the line of the Army. The Chief Signal Officer believes in the service of officers with troops, and believes further that every officer who comes into the Signal Corps should, as in the past, obtain his promotion by competitive examinations. This rule has been the making of the Signal Corps of the Army.

The entire enlisted force of the Signal Corps belongs to the regular establishment, but no less than 41 of the 52 officers are volunteers, whose present commissions have been largely earned by reason of professional ability displayed in the field, or for gallantry in the face of the enemy. It is therefore hoped that the reorganization by Congress of the Signal Corps will be on lines which, while recognizing distinguished services of the volunteer soldier, shall conform to the practices of leading industrial corporations. Selection, competition, and elimination, without personal favor or discrimination, should be the basic principles.

## THE LIBRARY OF THE ARMY AND THE WAR DEPARTMENT.

This collection of books has usually been called the War Department Library, yet in truth it belongs almost entirely to the Army of the United States, the books having been purchased from its contingent fund. Under these conditions it has been administered in the interests of the Army at large, while at the same time serving the office of the Secretary of War and all the bureaus of the War Department as a library of reference and issue. The library has been under the general supervision of the Chief Signal Officer of the Army in addition to his other duties, and in connection therewith he has paid particular attention to the selection of suitable professional publications and their proper cataloguing for the use of the Army. Under this policy the library is gradually becoming one of the best collections of military literature in the world.

### GROWTH.

The number of books has been doubled in the past twenty years and now amounts to more than 40,000 volumes, with an annual increase of over 2,000. Exclusive of public documents and Government publications, there were added to the library during the year 1,903 books and about 1,000 pamphlets, including periodicals. Of the books, 767 were acquired by purchase, 229 by exchange, 352 by donation, and 555 by the conversion of pamphlets into bound volumes.

### CIRCULATION.

Improved methods have been adopted in the issue of books to Army officers and Department employees, and every possible courtesy is extended to consulting students, whose numbers are increasing as the value of the library is becoming more generally appreciated.

The number of volumes loaned to officers and men of the Army and to the employees of the War Department was about 4,000. In addition, 8,369 books were consulted in the library.

The reading room feature introduced during the past year attracts many interested readers desirous of keeping in touch with leading military periodicals.

### EXCHANGES.

The library has been very successful in exchanges authorized by the law of January 12, 1895, having received during the past year, in return for the military publications of the War Department, a large number of foreign military periodicals, and also many valuable domestic exchanges of a military and historical nature.

Systematic efforts are made to obtain literature relating to American wars, especially the war for the Union. Particular attention is called to Subject Catalogue No. 6, which, in successive additions, is becoming a most valuable bibliography of an important subdivision of our civil war literature, furnishing considerable rare material for historical students. Gradually the deficiencies in important military serial publications are being filled by purchase or exchange. Every possible effort has been made to secure a complete file of official documents bearing upon the war of 1898, and among the unofficial publications of this period may be mentioned one of the most elaborate collections of newspaper clippings ever brought together—a unique journalistic history of the war in 20 large quarto volumes, which is likely to prove invaluable to future historians.

### CONGRESSIONAL DOCUMENTS.

The important work of rearranging the books of the library on modern principles of classification has proceeded as rapidly as possible. The fourth floor of the library is devoted almost entirely to a valuable file of Congressional documents, containing, with the exception of three, every bound volume issued from the Fifteenth to the Fiftieth Congress, and practically all subsequent issues. Every volume of this collection is easily identified by a conspicuous label giving the serial number adopted several years ago by the document division of the Government Printing Office. In like manner all duplicate Congressional documents belonging to the library are carefully filed and often become available for distant loans, leaving the regular file complete for local use. These documents have at last found a permanent location, easily accessible to all interested in the official history of the country. Much has been done toward enlarging the library collection of original public documents of the first fourteen Congresses. The time usually spent on catalogues has been devoted during the past year to the development of a bibliography of these publications. The importance of such a finding list justifies all the painstaking effort that has been expended upon it.

### FINDING LISTS.

Under the new administration of the library, the following serviceable finding lists have been issued:

Alphabetical list of additions made to the War Department Library from June, 1891, to May, 1894. Quarto. 35 pp.

Subject Catalogue No. 1, additions to War Department Library from May, 1894, to October, 1894. Quarto. 30 pp.

Subject Catalogue No. 2, index of periodicals and other serials in the War Department Library. 1895. Quarto. 37 pp.

Subject Catalogue No. 3, index of literature relating to Mexico in the War Department Library. 1896. Quarto. 120 pp.

Rough list of the more important additions to the War Department Library from July 1, 1895, to September 30, 1896. Octavo. 1896. 21 pp.

Rough list of the more important additions to the War Department Library during 1897. 1898. Octavo. 24 pp.

Subject Catalogue No. 4, military biographies and other personal literature in the War Department Library. 1897. Octavo. 93 pp. Second edition, 1899. Octavo. 145 pp.

Subject Catalogue No. 5, list of photographs and photographic negatives relating to the war for the Union, now in the War Department Library. 1897. Octavo. 219 pp.

Subject Catalogue No. 6, military literature in the War Department Library relating chiefly to the participation of the individual States in the war for the Union. 1897. Octavo. 203 pp. Second edition, 1899. Octavo. 266 pp.

Subject Catalogue No. 7, military literature in the War Department Library relating to the Chattanooga and Chickamauga period, August to December, 1863. 1898. Octavo. 75 pp.

### CROWDED QUARTERS.

The space allotted to the library twelve years ago is now quite inadequate to the daily demands upon it. The briefest inspection will reveal the need of more room for the suitable shelving of a rapid accumulation of literature that should be easily accessible to military students.

### WAR DEPARTMENT PHOTOGRAPHS.

Especial attention has been given to the cataloguing, filing, and arranging of the very valuable photographs and photographic negatives relating to the war for the Union. There are now over 8,000 such photographs on file in the War Department Library.

These valuable collections have been placed beyond the chance of future injury, and are so arranged that any single photograph can be at once reproduced. The process of identification has of necessity been slow, and there are yet several hundred portraits of distinguished soldiers and civilians in the unrecognized list. A finding list of the photographs and photographic negatives has been printed, thus widely extending the value and knowledge of these collections. In exceptional cases, where such action would be in the public interests, or as a proper concession to the surviving relatives, permission is granted, in accordance with the instructions of the Secretary of War, for reproduction of selected photographs under rigid restrictions insuring the safety of the negatives.

### WAR DEPARTMENT DOCUMENTS.

The distribution of such documents as are published by the War Department, printed only in small editions for the use of the Army, has been regularly and systematically conducted. This work, carried on in obedience to the special provisions of law, is of such importance in character as to demand the assignment to it of a permanent clerk. It has been most efficiently performed by Mr. F. A. Schneider, whose business methods have simplified and facilitated the work. The other employees have served with fidelity and efficiency.

Legislation by Congress is necessary, and should be obtained, whereby the National Guard can obtain at their own expense the military publications of the War Department, which are now issued in limited numbers at the expense of the printing fund of the War Department.

### LIBRARY STAFF.

The Chief Signal Officer of the Army desires to recognize the fidelity and efficiency of the present library force.

Mr. James W. Cheney, librarian, has been indefatigable in his efforts to increase the value of the library by introducing modern methods, which were sadly in arrears before his appointment.

Miss Caroline W. Kreuttner has ably seconded Mr. Cheney's efforts, and fortunately possesses knowledge of modern library methods that have been of special value to the Department.

It is urgently recommended that a permanent corps of competent assistants be appointed to cooperate with the librarian in a work of increasing usefulness to the Department and to the Army at large. The assistants are all on the temporary roll, and all their library experience, including even knowledge of typewriting, has been gained since their connection with this office, which means that a large amount of patient effort has been expended in training those who should have been fairly equipped with technical efficiency at the outset. After a previous period of ineffective service from employees singularly ill adapted to library duties, the past year has shown marked improvement in the character of work performed by the present library staff, but satisfactory results can not be expected until the library force is placed upon a permanent foundation, and selected with special reference to technical qualifications. At least four assistants should be provided for, as follows: Principal cataloguer, $1,200; 2 expert typewriters, 1 of whom should be a stenographer, $1,000 each, and clerk in charge of reference division, $1,000. In addition to the above, an experienced shipping clerk, at $1,000, is indispensable to the requirements of a large distribution authorized by the Secretary of War.

A. W. GREELY,
*Brigadier-General, Chief Signal Officer of the Army.*

The Hon. ELIHU ROOT,
*Secretary of War.*

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# APPENDIX No. 1.

## REPORT OF MAJ. R. E. THOMPSON ON MILITARY TELEGRAPH LINES OF THE UNITED STATES.

WASHINGTON, D. C., *July 1, 1900.*

SIR: I have the honor to submit the following report on military telegraph lines within the United States:

These lines have an aggregate length approximating 900 miles. For convenience of administration the several sections are controlled by department signal officers. The lines of the Department of California by Maj. Frank Greene until he was relieved for Alaskan duty, June 1, when they fell to Capt. A. B. Dyer, Sixth United States Artillery, signal officer, with headquarters at San Francisco; Department of the Colorado by Capt. J. B. Bennet, Sixteenth United States Infantry, signal officer, Denver, Colo., and Department of Texas by First Lieut. Howard R. Perry, Seventh United States Infantry, signal officer, San Antonio, Tex. There are short lines in other departments, connecting military posts with the commercial systems of the country, the management of which devolves upon the post commanders concerned.

### DEPARTMENT OF CALIFORNIA.

The telegraph lines and cables of this department are located at or in the vicinity of San Francisco, and are operated in connection with the defenses of the harbor. During the year a telephone line was completed connecting the Presidio, the muster-out camp, hospital, and post headquarters; a telephone line was also constructed connecting the small-arm rifle ranges with headquarters and the headquarters commanding officer of the recruit camp, and the headquarters of the commanding officer of the volunteer infantry camp.

At Fort McDowell a telephone line was constructed connecting that post with the detention camp at Quarry Point, the quarantine hospital, and the post telegraph office. A section of the overhead wires of the harbor system, extending across the point of the new 8-inch battery, was replaced by an underground three-conductor lead-covered cable, properly protected by redwood boards, buried 2 feet in the ground.

*Fort Baker.*—The batteries at Yellow Bluff and Gravelly Beach were connected in part by a wire strung on iron poles and in part by a wire of the fire-control system.

On January 11, 1900, an unused conductor in each of the cables between Angel Island and the line-point reservation, and between the latter point and the Presidio wharf with an unused aerial wire between these cables was temporarily turned over to the United States Marine-Hospital Service. Two wires leading from Fort Baker to Bonita were also temporarily placed at the disposal of the engineer officer in charge of the harbor system of defense.

A system of wireless telegraphy has been installed, putting Fort Mason in touch with Alcatraz Island. At the close of the year it was working well.

### DEPARTMENT OF THE COLORADO.

There are five sections of military telegraph, with one branch and one telephone line, in this department, with a total length of 509½ miles.

*Holbrook-Willcox section.*—This section is 268 miles long, extending from Holbrook, Ariz., on the Atlantic and Pacific Railway, to Willcox, Ariz., on the Southern Pacific Railway. At San Carlos it also connects with the Gila Valley, Globe and Northern Railway wire, and is also an outlet for the Globe and San Carlos Telegraph companies' wire at the same point.

*Hellner-Mammoth branch.*—This branch of the Holbrook-Wilcox section, 34 miles long, is operated by a repeater at Hellner's ranch. Service on this branch has not been satisfactory, owing to its dilapidated condition; a thorough overhauling is contemplated.

*Price-Duchesne section.*—This section, 87 miles in length, extends from Price, Utah, to Fort Duchesne, Utah, and affords telegraphic outlet to the Indian agencies in the vicinity of the post. It is operated both as a telegraph and a telephone line, telephones being situated at four intermediate points and at the terminals. Results are satisfactory and the section is in good repair.

*Bisbee-San Bernardino section.*—This section is 42 miles in length and extends from Bisbee, on the Arizona Southeastern Railway, to San Bernardino.

*Fort Bayard-Silver City line.*—This line, 13 miles long, connects Fort Bayard, N. Mex., with the commercial system at Silver City, N. Mex. The line was operated as a telegraph line until January 1, 1900, and was then equipped with telephones owing to the lack of signalmen for its operation by key. A civilian is employed at Silver City as transfer operator. Fort Bayard is also connected with Bayard Station, the shipping point of the post, by a line 2½ miles in length.

Fort Wingate line connects Fort Wingate, N. Mex., with Wingate Station.

### DEPARTMENT OF TEXAS.

The forts Brown-McIntosh section extends from Brownsville to Laredo, Tex., skirting the Mexican frontier for a distance of 209 miles. The line is in a good state of repair, but interruptions are still suffered as in former years from the wanton breaking of insulators. Offices are in operation on the line at Laredo (Fort McIntosh), Carrizo, Roma, Fort Ringgold, Edinburg, Santa Maria, and Brownsville (Fort Brown).

The electrical system established by the corps at the various seacoast fortifications have been described in detail in a previous report. They have been maintained during the year with but few breaks, the most serious of which, the rupture of the cable between Block Island and Naragansett Pier, R. I., and that connecting forts Mott and Delaware, on the Delaware River, were speedily repaired.

From lack of data it is impossible to state with accuracy the volume of Government and commercial business transacted over these military lines. Reports show that 36,702 messages were handled in the Department of the Colorado at stations where tolls are collected, and 17,990 in the Department of Texas; $3,398.60 line receipts have been covered into the Treasury during the year.

Very respectfully,

R. E. Thompson,
*Major, Signal Corps, U. S. A.*

The Chief Signal Officer, United States Army.

## APPENDIX No. 2.

### Report of Capt. G. W. S. Stevens, Signal Officer of Volunteers, on the Signal Corps Post at Fort Myer, Va.

Office of the Commanding Officer, Signal Corps Post,
*Fort Myer, Va., September 24, 1900.*

Sir: I have the honor to submit herewith an annual report of the school of instruction and depot of the Signal Corps, known as the Signal Corps Post at Fort Myer, Va., setting forth the operations of the school and the progress of the construction of the post. The report will necessarily date back to the fall of 1898, in order that the full history of the construction of the post and the establishing of the school may be shown, and because in June, 1899, none of the buildings of the new post were even in process of construction.

At the end of the war with Spain the Signal Corps, having been considerably enlarged through the accession of volunteer officers and men, had before it a period of some months of existence as a combined force of regulars and volunteers, with no available permanent depot for troops and property in the United States at which men and officers could be placed pending their transfer to different points, or place for storage, for repair and handling of property, which pertained exclusively to the technical work of the corps. In the fall of 1898, by request of the Chief Signal Officer of the Army, and with the approval of the officer in charge of the reservation at Fort Myer, the Signal Corps was assigned an old abandoned wooden barracks and one old wooden set of officers' quarters at Fort Myer by the Adjutant-General of the Army.

Just previous to this a number of volunteer companies were camped at Washington Barracks, and from there, on the 3d of October, were sent to the various cities for muster out, and a small body of the regular Signal Corps, enlisted men and one officer, which had been at Montauk Point in camp, was sent to Fort Myer to occupy the wooden barracks above referred to. This detachment comprised the remnant of the men who established communications before Santiago and the remnant of the balloon detachment which took part in the advance upon Santiago.

On December 18, 1898, under provisions of paragraph 53, Special Orders, No. 289, series of 1898, Adjutant-General's Office, I was directed to take station at Fort Myer, Va., with a view to the eventual erection of the Signal Corps Post on a portion of the military reservation, which a board of officers had already reported upon for the purpose of setting it aside for the use of the Signal Corps.

On December 22, 1898, the Secretary of War approved the recommendations of the board, and a portion of the reservation of Fort Myer, Va., was formally set aside for the use of the Signal Corps.

The ground was without buildings, and most of it carried a second growth of timber. At the time I assumed command, December 18, 1898, the Signal Corps detachment at Fort Myer, Va., consisted of 45 enlisted men and 1 officer, Lieut. G. C. Burnell, whom I relieved, and who then proceeded to Cuba. Telegraph practice and signal drill and instruction in the duties of a soldier were already under way in the hands of Lieutenant Burnell, and to this detachment from that time on were sent not only recruits, but also men who were transferred home, and also individual enlisted men of the volunteers.

Property from Cuba and Porto Rico of all kinds, serviceable and unserviceable, was shipped to this detachment and invoiced to me with a view to its care and ultimate repair, if possible. In a short time the ground about the old barracks was covered with piles of property protected with tarpaulins and by every means possible, while the porch of the barracks, and even portions of the interior, were filled with stores which had to be covered in some way.

In the meantime the Secretary of War had apportioned a certain amount for the purpose of building one brick barracks, one brick storehouse, and three sets of officers' quarters. The property accumulated to such an extent during the winter of 1898–99 that it became absolutely necessary to obtain more satisfactory shelter, and the Quartermaster's Department constructed a temporary wooden storehouse 100 feet long pending the erection of more permanent buildings. This building was completed none too soon, as about this time the demands made upon us for the housing of property and for repair work became so great that the building soon overflowed, and even at the present date large quantities of property are still outdoors. The apportionment of funds for the construction of the brick buildings, the planning, and putting out of the proposals occupied time, and finally, in the winter and spring of 1899 and 1900, the work had progressed so far as to enable us, in the latter part of March, to occupy the brick barracks, which were designed to accommodate 100 men. The brick storehouse and officers' quarters were finished about the same time, and we were enabled to vacate the old wooden buildings which we had previously occupied and which had become totally inadequate in space, not only for the number of men that were being handled from time to time, but also in office room, the technical and clerical work of the depot having become enormous. The first floor of one of the smaller officers' quarters was used for offices and the men moved into the barracks, and as many of the stores as possible were placed under cover.

An apportionment of funds was asked for for the purpose of building roads and walks and for the purpose of grading, the Signal Corps Reservation being in such condition that in the winter time or in wet weather it was very difficult and sometimes almost impossible to approach any of the buildings. By labor of the troops at odd times some little grading and filling was done, and a roadway on natural ground was opened up to the wooden storehouse. After Lieutenant Burnell left, in the fall of 1898, I was the only officer at the post for a long period, and finally, in the spring of 1899, Lieutenant Burnell was returned to duty at the Signal Corps Post, and by his energy and efficiency aided greatly in the work of developing the school. While officers were from time to time occasionally at the post en route to other stations, I never had but this one officer available for assignment for permanent work at the school. Lieutenant Burnell continued as my assistant until finally relieved by Lieut. Carl F. Hartmann, signal officer volunteers, now captain and signal officer volunteers, who has rendered satisfactory, willing, and efficient assistance.

At the most 2 officers had constituted the working force of officers at the school, whereas at least 5, and more properly 6, were needed for the work.

As stated above the men of the detachment numbered 45 on the 18th of December, 1898, and the Chief Signal Officer of the Army had decided that for administration purposes the garrison of the school of instruction and depot would be designated as Company B of the Signal Corps, and to this company, then, as I stated above, were sent men of all kinds for instruction and for care, pending their use abroad or in the United States. In a short time the strength rose to an average of between 60 and 70 men, the actual number present varying greatly, as detachments were shipped to the Philippines and to Cuba as soon as the men could be considered at all useful in telegraphy; the pressure for operators has always continued to be a strain, the demands for shipments of as high as 20 men at a time being made, and in June, 1900, the garrison had 107 changes during one month.

Much could be said of the difficulties, at times seemingly insurmountable, which were overcome. Not only had a great amount of technical work to be done, a great amount of property to be handled, and a great amount of repairing to be done, but in addition came up the problem of repeatedly instructing new men in telegraphy and signaling and photography, and also instruction of these new men in the school of the soldier, and even instruction of many men who had enlisted during the war and had immediately been placed on detached stations. In conducting the garrison and the military post all the problems confronting an ordinary garrison arose, and often how the Regulations could be completely complied with and the demands for special work and special service met at the same time seemed a problem not capable of solution. Fortunately, the officers on duty at the school, having had previous experience, showed good judgment and devoted themselves day and night to the operation of the post. I immediately, upon attempting to start the school and depot, started a system with the noncommissioned officers which had for its object the impressing upon them of the fact that they were special men whose ultimate position would be one of trust and probably separation from immediate control of an officer, and endeavored to instill into them the idea of conscientious performance of duty without the necessity of harsh measures. The same plan was pursued with the men, while at the same time men were promptly punished for repeating offenses and strict discipline was enforced. The proportion of noncommissioned officers in the corps was such that considerable control could be exercised over the behavior of men by the prospect of promotion and by the exercise of the utmost care and the strictest justice in the recommendations. In a very short time the confidence of the men was gained, and so completely was the system of promotion guarded that the officers and all assistants, even the instructors in military drills, were consulted, and a soldier's willingness, intelligence, general behavior, and all qualifications were lengthily studied before he was recommended for promotion. The result has been extremely satisfactory, as was shown by the report of Col. P. D. Vroom, inspector-general, who inspected the Signal Corps Post at Fort Myer May 31 and June 1, 1890, the very remarkable court-martial record of only 50 summary court cases in the year and 2 general court cases appearing against the garrison, whose average strength for twelve months was about 70 (but there had been approximately 700 changes in these twelve months).

To give some idea of the work done with men alone from the time of the inception of the school to June 30, 1900, it is sufficient to say that there were 904 changes of men, gain and loss, and this number will have risen to about 1,100 by the end of the year 1900. There follows a brief tabulation of the conditions which have existed in the enlisted strength up to June 30, 1900:

| | |
|---|---|
| Men in company, October 25, 1898 | 33 |
| Men who arrived between October 25, 1898, and June 30, 1900 | 461 |
| Total | 494 |
| Men who departed between October 25, 1898, and June 30, 1900 | 410 |
| Men transferred from this post between above dates | 345 |
| Men transferred from detached service | 9 |
| Total transferred | 354 |
| Men discharged between above dates | 43 |
| Men deserted between above dates | 11 |
| Men died between above dates | 2 |
| Total loss | 410 |

NOTE.—Private Harbaugh dropped as "died November 1, 1898," and private C. H. Smith dropped as "died April 21, 1899."

From the above list it can be at once seen that the office work alone called for by such changes was abnormal, and it also shows in part the service that is being required of the Signal Corps abroad and in the United States, when the necessity for furnishing men at such a rate as has been demanded, and still there seems to be no end to the demand.

At the present date instruction going on at the school consists of instruction in telegraphy, visual signaling by day and night with all the various instruments, instruction in photography, instruction in line building, instruction in the care of telephones and telephone lines, instruction in the use of technical instruments from time to time, and the maintenance of telegraph and telephone lines. In addition some 40 miles or more of telegraph and telephone line is cared for from this post.

The buildings now constituting the Signal Corps post consist of 3 sets of officers' quarters, 1 barrack for 100 men, 1 brick storehouse, 1 temporary wooden storehouse, 1 temporary iron wagon shed, and 1 temporary iron stable. There will be constructed and completed by December, 1900, an administration and instruction building and a balloon house, the latter of sufficient size to contain 1 dragoon balloon when inflated or 2 pear-shaped balloons inflated. In addition there will be finished by December, 1900, sufficient macadamized roadway to enable vehicles to reach all of these buildings. There will, however, be no permanent walks and no possibility of at present completing the grading or doing any sodding, as there was not enough money available for application to these purposes this coming fall.

Even with the equipment of buildings set forth above we have a large quantity of property which has to remain outdoors, and it is earnestly recommended that as soon as practicable there should be built at the Signal Corps post the following buildings:

One temporary iron shelter 150 feet long by 25 feet wide, with front openings allowing for a vertical entrance between sills and plates of 18 feet, for housing bulky property; 1 temporary iron building 50 by 20 feet with 7 feet or 8 feet in the clear, divided into two compartments, one for the carpenter and repair shop, and the other compartment for the forge room; 1 permanent brick stable to accommodate 20 animals (the present stable accommodates 12 animals, and has necessitated the placing of an officer's horse out of doors at times, we having at present 11 public animals and 2 officers' horses, with the probability of having more animals in time); 1 building, to be used for a laboratory, testing and electrical establishment, and photograph room, 60 feet by 20 feet, 2 stories with basement, of brick, with interior walls unfinished; 1 temporary iron building 40 feet by 20 feet, practically a shed, and having 15 feet in the clear, to shelter the gas plant for balloon purposes. In addition to this there will be needed about $6,000 for permanent walks, grading, and roadways for reaching the different portions of the post. The approximate cost of the three iron buildings and brick stable would be about $10,000, perhaps slightly less. The cost of the laboratory building at the dimensions given would be about $8,500, and as this building would necessarily be a technical building for the Signal Corps, it is presumed that an appropriation must be obtained for it.

At present we have considerable machinery and many appliances which are to be used eventually for repair work and construction purposes at the buildings above mentioned, and the buildings are such as are needed more immediately to enable the clearing up of the present crowded condition and for the prosecution of the work of the school. The laboratory and photography building calls for some special construction in the roof and in the interior.

Very respectfully,

G. W. S. Stevens,
*Captain and Signal Officer, U. S. V.,*
*Commanding Signal Corps Post.*

The Chief Signal Officer, United States Army.

## APPENDIX No. 3.

### Extracts from Reports of Col. H. H. C. Dunwoody, Chief Signal Officer Division of Cuba.

My previous report of the operations of the Signal Corps in Cuba covered a period from the date of occupation of the island of Cuba by the United States forces until June 30, 1899, a short time over six months, during which time the telegraph lines in Cuba owned and controlled by the Spanish Government were taken possession of, repaired, extended, and operated by the Signal Corps. At that time the urgent requirements for the establishment of a military telegraph line, in order to place the commanding general in communication with all points where garrisons were located, did not admit of the delay which would have been entailed in the building of a substantial and permanent telegraph system; therefore, under these conditions, the telegraph construction performed during the period mentioned was, to a certain extent, of a temporary nature by reason of its hasty erection. During this time the commercial business was a secondary feature, the telegraph service being devoted principally to the handling of official and administrative telegrams. With the revival of business, however, it became necessary to place the Cuban telegraph system on a more substantial basis and to equip the lines more thoroughly for the handling of the increasing commercial business.

With this end in view 697 miles of new wire has been added to the system. The most effective advance has been the construction of a second line connecting Habana with Santiago. This additional wire was found necessary to meet the demands of commercial telegraphy, and has also proved of great avail in the civil and military administration of the government.

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From a military point of view the present status of the telegraph lines is almost all that could be desired, the interior of the island being so traversed with well-working wires that at a few minutes' notice the central telegraph station in Havana can be put in direct connection with any body of troops on the island. In fact, since the completion of the iron-pole line between Havana and Jovellanos and other construction, principally in the Department of Santiago and Puerto Principe, the relays between Habana and Santiago have been eliminated, and for some months past these two offices have been working direct with the assistance of a set of Millikin-Hicks repeaters at Puerto Principe, and during unfavorable weather a similar apparatus is employed at Santa Clara. As the last-named station, together with Puerto Principe and Holguin, were at this time last year relay points for the interchange of Havana-Santiago telegrams, a pertinent comparison suggests itself and speaks well for the operations of the Signal Corps during the past year, especially so when the fact is considered that under the Spanish management it was never found possible to work direct between Havana and Santiago over the land lines, although experiments were made time and again. This information was gathered from several operators—Cubans—now in the employ of the Government telegraph service, who for ten years and upward served in the same capacity under the former administration of the island, and, although they represent the highest class of telegraphers employed at that time, the extension of the circuits and the introduction of American apparatus and methods was a revelation in telegraphy to them. The improved facilities have been welcomed by the public to such an extent that the Cuban Submarine Cable Company, which concern for a long time had practically no opposition in securing the telegraph business of an urgent nature between coast points reached by their line, was obliged to recognize in the Government telegraph service a strong competitor, with the result that they, the cable company, have reduced their Havana-Santiago rate from 25 cents per word, minimum 10 words, or in other words, from a minimum charge of $2.50 per message, to a basis of 10 cents per word, minimum 5 words, the rates to other points on the island reached by their lines being reduced proportionately. In other ways the cable company has given evidence of activity in soliciting business which formerly came to them of a necessity.

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Anent the introduction of many progressive features, permissible by reason of the improved service, I refer with just gratification to the diversion en route of the United States–Porto Rican cablegrams, which, previous to a couple of months ago, were handled exclusively by the commercial cable companies. Since May 1, when the new routing was inaugurated, this business has been moving, to the satisfaction of all concerned, via the International Ocean Cable Company to Havana, the Government telegraph lines to Santiago, at which station delivery is made to the West India and Panama Cable Company, which concern, by reason of concessional stipulations, accords free service on Government cables between San Juan and Santiago. When the present routing was put into effect imperative orders were issued regarding the importance of affording the San Juan cablegrams the quickest possible transmission over the Cuban land lines, and the statement appended hereto, wherein is shown an average transmission time of twenty-four minutes between Santiago and Havana during the month of June, demonstrates the alacrity and feeling of cooperation exhibited by all concerned in the obeying of these instructions. It should be considered that in the statement referred to, one similar to which for the month of May was sent the Chief Signal Officer of the Army, is included the time consumed in the counter handling of the cables at Havana, as well as the time necessary for the booking, copying, and delivery to the cable company at Santiago. Arrangements have been perfected whereby, in the event of temporary interruption to the Cuban land lines, the San Juan cablegrams, as well as other telegrams of an urgent nature, are diverted to the Submarine Cable Company as soon as possible for transmission. However, owing to the present stable condition of the Government telegraph lines, it is seldom necessary to resort to such action.

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Testing stations have been designated on the Government telegraph lines at the most important diverging points, principally as follows:

Beginning with Havana, first in importance, Matanzas, Santa Clara, Puerto Principe, Tunas, Bayamo, and Santiago. At each of these stations the operator in charge is vested with authority of "wire chief," and it is the duty of each of these men every morning to test out the circuits in his territory, locate as closely as possible any cross, ground, escape, break, or other interruption which may exist, and immediately dispatch the repairman nearest the interruption to the scene of trouble. A report of the interruptions is sent to the chief signal officer of the island, who is therefore at all times cognizant of the working capacity of the system.

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The telegraph construction work on the island of Cuba was attended with many difficulties, and the cost in different sections of the country characterized by an absence of uniformity is owing to the topography of the country and the extremely limited railway facilities afforded.

These conditions are especially noticeable in that portion of the island lying to the east of Santa Clara and Placetas, where practically there are no railroad facilities which could be taken advantage of in the distribution of material and appliances and the movements of men engaged in the work. It was necessary, therefore, to resort to animal transportation, and in the majority of cases to use pack mules in the distribution of telegraph poles, wire, and the lighter material entering into the construction of the lines, thus rendering the work of a very slow and expensive nature—in fact, in some of the mountainous regions the movements of the pack train were greatly retarded, owing to the hazardous trails. Much trouble was also caused in the lower countries by the overflowing of rivers, especially in the case of the Cauto River, Santiago Province, which is treacherous at all times and very turbulent during the rainy season.

In the construction of telegraph lines through the heavily wooded country great precaution has been taken in the erection of the lines, in order to avoid the constant dangers of timber and foliage, where such growth exists in close proximity to the telegraph lines.

The advancement of the military telephone service in the division at all points where troops are stationed has been rapid and satisfactory. Every effort has been made to provide adequate facilities for this means of communication at all department headquarters and in the adjacent territory. The system in existence a year ago has been greatly enlarged, reconstructed on a more durable basis, and the various exchanges remodeled on a metropolitan plan.

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A noteworthy feat in the matter of submarine construction was accomplished by the Signal Corps in the laying of two cables across the bay in Havana, for the establishment of more perfect communication between Havana proper, Morro Castle, and Cabanas. This cable was laid under the direction of Chief Line Inspector H. Smith, and the service is all that could be desired.

The difficulties of travel mentioned in connection with the reconstruction of the lines are, of course, encountered by the repairmen in the maintenance of the lines, and for that reason it is necessary to retain a larger number of linemen than would be the case if the lines followed a reasonably passable road. During the rainy season Cuba is frequently visited by storms so destructive that no telegraph lines can withstand them, and in order to prepare for emergencies of this nature great care has been taken to place the linemen at the most advantageous stations and under the superintendence of practical and experienced inspectors, who are thoroughly acquainted with the qualifications of the linemen under their control and the territory which it is their duty to guard.

Wherever the telegraph lines follow the line of a railroad the repairmen have generally been furnished with railroad velocipedes, and, having the additional advantage of free train transportation in reaching the scene of any interruptions, the stations are placed a greater distance apart.

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The cable accounts for official cablegrams were, in the month of January, 1900, transferred to the Signal Corps for audit and settlement. The initial set of accounts transferred to the Signal Corps at this time were the accumulation of a year, and their adjustment required the services of three accountants thoroughly familiar with telegraphic accounts for a period of several months. All matters of this nature affecting business handled previous to January, 1900, have now been disposed of, and all cable accounts are now being adjusted promptly upon presentation.

In this connection it might be appropriate to mention the fact that the accounts of the cable company at Havana for services rendered the Government during the month of January, 1899, amounted to $3,609.55, while for the month of June, 1900, their bills amounted to but $112.47 for the transmission of Government telegrams from Havana to various points in the island of Cuba. The economy of maintaining a system of Government telegraph in the Division of Cuba is apparent in the light of this comparison.

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Col. H. H. C. Dunwoody has been on duty as chief signal officer of the division throughout the entire fiscal year, with the exception of that period between September 1, 1899, and November 17, 1899, during which time he was on leave of absence in the United States.

Capt. Samuel Reber, Signal Corps, United States Volunteers, was on duty as signal officer of the Department of Matanzas and Santa Clara until August 1, 1899, when he was relieved by Special Orders, No. 111, Headquarters Division of Cuba, and directed to report to the chief signal officer of the division. Upon his arrival at Havana he was assigned to duty in connection with the telegraph service of the island as assistant to the chief signal officer of the division. He was relieved from this duty and ordered to proceed to Governors Island, N. Y., September 25, 1899. Capt. Samuel Reber was acting chief signal officer of the division in the absence of Col. H. H. C. Dunwoody from September 1, 1899, to September 25, 1899.

Capt. Edward B. Ives, signal officer, United States Volunteers, was on duty as signal officer of the Department of the Provinces of Havana and Pinar del Rio, stationed at Quemados, Cuba, until October 3, 1899, when he was granted leave of absence for one month, with permission to leave the division. During the absence of Capt. Edward B. Ives Lieut. Fitzhugh Lee, jr., acted as signal officer of that department. On December 9, 1899, Capt. Edward B. Ives was appointed disbursing and property officer to the chief signal officer of the island. From this time until March 6, 1900, he performed the duties of signal officer of the Department of Havana and Pinar del Rio, as well as the duties pertaining to the office of the disbursing and property officer, when he was relieved from the duties of signal officer of that department and placed in full control of the disbursing and Signal Corps funds. On May 29, 1900, Capt. Edward B. Ives was appointed commanding officer of Company C, Signal Corps, which company comprises all of the enlisted men of the Signal Corps serving in the Division of Cuba.

Capt. Charles B. Hepburn, Signal Corps, United States Volunteers, was on duty as signal officer of the Department of Puerto Principe until July 12, 1899, when he was relieved and assigned to duty as signal officer at Pinar del Rio. On December 21, 1899, he was relieved from duty at Pinar del Rio and assigned to duty as assistant signal officer of the Department of the Provinces of Havana and Pinar del Rio.

First Lieut. Frank E. Lyman, jr., Signal Corps, United States Volunteers, was on duty as property officer, acting assistant quartermaster, and assistant to the signal officer of the Department of Matanzas and Santa Clara until August 11, 1899, when Capt. Samuel Reber was relieved as signal officer of that department and Lieut. Frank E. Lyman, jr., assumed his duties. Lieut. Frank E. Lyman, jr., was relieved as signal officer of the Department of Matanzas and Santa Clara, in compliance with instructions from the Secretary of War, October 25, 1899. Lieut. A. P. Berry, Tenth Infantry, was temporarily detailed as acting signal officer of the department until the arrival of Lieut. Charles B. Rogan, jr., at Matanzas.

First. Lieut. Carl F. Hartmann, Signal Corps, United States Volunteers, was on duty in this division as signal officer at Puerto Principe from July 1, 1899, until August 17, 1899, when he was relieved by Second Lieut. Charles S. Wallace, Signal Officer, United States Volunteers, as per Special Orders, No. 117, Division of Cuba, August 17, 1899, when First Lieut. Carl F. Hartmann was appointed signal officer of the Department of Santiago and Puerto Principe, as per Special Orders, No. 129, Headquarters of the Army, series 1899, and joined his station at Santiago September 14, 1899. He was relieved as signal officer of that department and ordered to New York, as per Special Orders, No. 87, Headquarters Department Santiago and Puerto Principe, May 4, 1900.

First Lieut. Leonard D. Wildman, Signal Corps, United States Volunteers, was on duty in this division as signal officer of the Department of Havana and Pinar del Rio from July 1, 1899, to July 3, 1899, on which latter date he was relieved and ordered to report at Governors Island.

First Lieut. John J. Ryan, Signal Corps, United States Volunteers, was on duty as signal officer at Puerto Principe until April 27, 1900, when he was transferred to the Department of Santiago and Puerto Principe and assigned to duty as signal officer of that department, with headquarters at Santiago.

First Lieut. William M. Talbott, Signal Corps, United States Volunteers, was on duty as signal officer in charge of the military telegraph station, in the city of

Havana, until July 28, 1899, when he was assigned to the additional duties of disbursing and property officer. Lieut. William M. Talbott relieved Capt. Samuel Reber as acting chief signal officer of the division September 30, 1899, and remained on duty in this position until Col. H. H. C. Dunwoody returned to the division, November 17, 1899. Lieut. William M. Talbott was relieved from duty as disbursing and property officer to the chief signal officer, Division of Cuba, and appointed signal officer to the Department of Matanzas and Santa Clara December 9, 1899, in which he served until June 10, 1900, when he left station at Matanzas, in pursuance of telegraphic instructions from the Adjutant-General of the Army, to proceed to New York.

Second Lieut. Richard O. Rickard, Signal Corps, United States Volunteers, was on duty at Santa Clara, Cuba, until July 3, 1899, when he was relieved and ordered to proceed to New York City and report by telegraph to the Adjutant-General of the Army for further instructions.

Second Lieut. Charles S. Wallace, Signal Corps, United States Volunteers, was on duty in the city of Havana, Cuba, until July 3, when he was ordered to proceed to Puerto Padre, Cuba, in charge of construction party, and on completion of the construction with which he was charged was directed to proceed to Puerto Principe as signal officer. Lieut. Charles S. Wallace was relieved at Puerto Principe on September 22, 1899, when he was ordered to proceed to New York City, via Havana, and report by telegraph to the Adjutant-General of the Army for further instructions.

First Lieut. Victor Shepherd, Signal Corps, United States Volunteers, has been on duty as disbursing and property officer of the Department of Santiago and Puerto Principe throughout the entire fiscal year.

First Lieut. Charles B. Rogan, jr., Signal Corps, United States Volunteers, was on duty as signal officer at Ciego de Avila until August 8, 1899, when he was granted leave of absence for one month with permission to leave the division. Upon his return, November 5, 1899, he was assigned to duty as signal officer of the Department of Mantanzas and Santa Clara, in which capacity he served until relieved by First Lieut. William M. Talbott on December 9, 1900. From this date until June 9, 1900, Lieut. Charles B. Rogan, jr., remained on duty at Mantanzas as property officer and assistant to the signal officer of the department, when he was appointed signal officer of the Department of Mantanzas and Santa Clara, relieving first Lieut. William M. Talbott on June 10, 1900, when the latter was directed to proceed to New York.

Second Lieut. H. W. Stamford was on duty in this division as disbursing and property officer to the chief signal officer of the division until August 2, 1899, when he was directed to proceed to New York City and report by telegraph to the Adjutant-General of the Army for further instructions.

Second Lieut. John T. Sayles, Signal Corps, United States Volunteers, was promoted from first-class sergeant, Signal Corps, United States Army, to date June 8, 1900. He remained on duty in Havana until June 30, 1900, when he was assigned to duty as acting signal officer of the Department of Mantanzas and Santa Clara, relieving First Lieut. Charles B. Rogan, jr., who was granted leave of absence for one month with permission to leave the island.

On June 30, 1899, there was 107 enlisted men of the Signal Corps in the island of Cuba connected with the maintenance and operation of the Government telegraph system.

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I desire to commend the officers and enlisted men of the Signal Corps, and the civilian employees who have served under me in the Division of Cuba for the faithful and effective manner in which they have discharged their arduous duties, exposed as they were to an enervating climate and to dangerous tropical fevers, and for the thoughtful cooperation extended in the reorganization and operation of the military and commercial system of telegraph with which the Signal Corps was charged.

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NOVEMBER 3, 1899.

The work of construction of the new 3-wire line from Havana to Matanzas with iron poles, which had been suspended on account of a disagreement with the railroad company, was resumed, after a satisfactory adjustment with the management of the company, and a force of eighteen men under a competent American foreman is now pushing the work forward. The completion of this line to Matanzas will greatly facilitate the handling of the business between these points.

The construction of the new line from Caibarien to Yaguajay was begun and is now fully under way.

The service of the telegraph system during the entire month has been very satisfactory, except from the 25th of the month, when there occurred a severe storm which completely cut off communication with Santiago. This break could not be repaired on account of its being between the Cauto and Caotigo rivers, which had risen on account of the heavy rain, and it was impossible to cross either to make the necessary repairs. These rivers are still high and the rain in that section of the country still continues. The lines are working to all other points, but official business to Santiago has to be routed from the various cable stations along the coast, and commercial business since the 25th has been only accepted subject to indefinite delay. Repair parties have been sent from Holguin and Santiago and are waiting on the banks of the rivers for the waters to recede, when the necessary repairs will immediately be made and communication restored.

The health of the command throughout the island has been very good. Lieutenant Hartmann, of Santiago, has been down with a slight attack of yellow fever, but is now fully recovered. Sergeant Campbell, on duty in the office of the disbursing officer in this city, has also had a slight attack of yellow fever, but is on duty again. Private Gerth, on duty as clerk in the office of the chief signal officer of the division, is now in the hospital with yellow fever.

JANUARY 20, 1900.

The month opened with the interruption of the telegraph lines in Santiago Province, due to the unusual destructive floods, which occurred during November and continued until December 5, the high water preventing the establishment of telegraphic communication until the 9th of that month. Since December 9 the line has been working through between Havana and Santiago every day.

Lieutenant Ryan reports that construction parties have left Puerto Principe for work to the eastward and to the westward, and reports that the line west to Soledad from Principe is ready to receive the second wire. Construction parties are organized at Sancti Spiritus and Ciego and I have all the material either on hand or in transit to those points to complete the work, which I anticipate will be finished by the last of March through to Santiago.

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The military telephone system in Havana continues to give general satisfaction, and numerous requests are being made for its extension. The cable crossing the bay to Cabanas has a single wire, and I therefore requested to be supplied with a 2-wire cable for the purpose of securing a more satisfactory working of the telephone system in the eastern part of the harber. I am informed that two one-half mile lengths of one conductor cable have been shipped to me from Governors Island, and as soon as received they will be placed in position and the telephone connection properly made.

Captain Ives has been designated as inspector of the telegraph lines, cables, telephones, and other electrical systems in the island of Cuba, under the provisions of proclamation No. 182, these headquarters, which places all the functions, powers, and duties of the cuerpo de comunicaciones of the island of Cuba under the Signal Corps, United States Army. He has requested the telephone and electric-light companies of Havana to submit a report of their operations under the terms of their concessions for the six months ending December 31, 1899.

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FEBRUARY 20, 1900.

The month of January opened with the arrangements having been completed for the construction of the second through line from Sancti Spiritus to Santiago, which is intended to give two working lines from Havana to Santiago, and it closed with working parties in the field in all of the provinces east of Havana, with sufficient material in sight to secure the completion of this work.

Commencing with the western province, Pinar del Rio, construction has been in progress on the line from Pinar del Rio to Vinales. Some trouble was discovered, due to the natives burning the poles and removing sections of wire from the line, which, I am informed, was due to the belief on the part of the inhabitants that the line was an American line, and their desire was to interrupt communication. I propose, however, to build the line through to Vinales and inform the alcalde at that town that if any further interruption to the telegraph line is made the line and office at Vinales will be discontinued.

The telegraph service in the provinces of Havana and Pinar del Rio has been satisfactory. There are 522 miles of telegraph lines maintained in these provinces, with nineteen stations.

In the province of Havana the 3-wire iron-pole line from Havana to Matanzas has been completed, and two working parties are now being placed in the field to construct a line on iron poles as far as Jovellanos, Department of Matanzas.

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Arrangements have been made for the laying of a 2-line cable between Havana and Cabanas, and we are only waiting now for a lighter to place the cable in position.

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In the Department of Puerto Principe, Lieut. John J. Ryan has displayed excellent qualities in the management of the construction work. Material and supplies were rapidly distributed by the working parties in the field, and I had the satisfaction of receiving the information that his work was completed some time before its completion was anticipated.

The second line is now completed in Puerto Principe Province as far as Guimara. After Lieutenant Ryan completed his work on this second line he withdrew his construction party and placed them on the line to Santa Cruz, with the intention of putting that line in fair condition.

Lieut. Carl F. Hartmann is rapidly pushing the work westward from Bayamo. * * * He reports that he is making rapid progress in the construction on the new line with three parties in the field and two more parties being organized.

The construction work planned in the province of Santiago is quite extensive, and it is hoped that it will be completed before the end of May.

The cut-off from Victoria to Bayamo shortens the main line 65 miles.

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MARCH 24, 1900.

The construction of the second through line to Santiago was completed as far as the western boundary of Santiago Province, and the work is well under way, with three working parties in the field between Guimara and San Luis, in Santiago Province, and it is expected that this entire line will be in operation by the end of March.

After the completion of the second through line the officer in charge of Santiago Province will continue to make extensive repairs, and, in some cases, new lines will be constructed so as to improve the entire system.

The line between Guantanamo and El Cristo will be reconstructed, and repairing parties will be put on the line between Guantanamo and Baracoa; also on the line from San Luis to Mayari, and the line from Bayamo to Manzanillo will be almost completley rebuilt. At least 1,000 poles will be necessary for the Bayamo-Manzanillo section.

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I inclose herewith a copy of the morning telephone report for the morning of the 28th, which will give you an idea as to the condition of the telegraph service in this city. I also inclose a diagram showing the telephone systems of Havana and Camp Columbia combined, with the names of the stations on each line; also a list of the subscribers, both alphabetically, and the line connections, of the Havana, Camp Columbia, Matanzas, Pinar del Rio, and the Guanajay exchanges.

The cable connecting Cabanas with the western shore of the bay was successfully laid, and Cabanas now has direct telephonic connection with the Havana exchange. The laying of the cable was very satisfactory and all concerned are well pleased.

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APRIL 24, 1900.

The construction work and repairs to telegraph lines was continued in the provinces and the work on the second through line from Havana to Santiago was pushed forward almost to completion, the last section of uncompleted work being in the western portion of Santiago Province, where three parties are in the field under Lieut. Victor Shepherd, Signal Corps, United States Volunteers, who went from Santiago de Cuba to Tunas by my special direction in order to facilitate the work and prevent interruption to the main line, due to the construction work. After completion of the through line the construction work will be continued in the province of Santiago by placing general repair parties on the principal side lines and the repair and reconstruction of the Manzanillo-Bayamo line.

In the province of Puerto Principe the principal construction work has consisted in placing the line from Puerto Principe to Santa Cruz in good working condition. The working force on the main line between Puerto Principe and Ciego de Avila was transferred to the Santa Cruz line upon the completion of the through line, and by the aid of the quartermaster's department, which furnished the necessary transportation in addition to wire wagons belonging to the Signal Corps, the work was prosecuted with good results. Owing to the completion of a new public road from Puerto Principe to Santa Cruz it was necessary to remove many poles and practically reconstruct the line for a great portion of the route.

The importance of this side line to Santa Cruz is not determined by the amount of local business over it, but it forms an outlet connecting with the cable for the transmission of official dispatches when the land lines may be down, either to the east or west of Puerto Principe.

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I am convinced that the present through lines will enable us to keep in communication with Santiago without much interruption, but the rainy season and violent storms will doubtless cause the land lines to be interrupted for a short time.

In the province of Santa Clara the work has chiefly consisted in extending the line of iron poles from Matanzas to Jovellanos, and two parties were in the field on this line, one under the direction of Sergt. Frederick A. Seume, and the other under Sergt. Carr Wilson. Both of these sergeants have been highly recommended by the signal officer of that department and they are worthy of promotion.

It is expected that the Matanzas and Jovellanos line will be completed by the middle of April. The completion of this line will prove a great benefit to the service and place this office and the Matanzas office in touch with all points more directly than when the through line passed through Union without touching at Matanzas.

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There has been some interruption to the telegraph service in the northern part of the province of Santa Clara, near Caibarien, and the officer in charge reports that it is quite evident that the trouble was caused by unknown parties tampering with the wire. The wires have been carefully patrolled, but as yet the trouble has not been located. This has been the subject of an official communication to the adjutant-general of the department, and the rural guard have been notified and instructed to discover, if possible, and arrest the guilty parties.

In the provinces of Havana and Pinar del Rio construction work was commenced on a line from Guanajay to Bahia Honda, and poles were contracted for, to be furnished not later than April 15, but up to the last of March one-half of the poles had been delivered, and with this amount of poles the line was constructed to Cabanas.

This work is being performed under the direction of Capt. Charles B. Hepburn, Signal Corps, United States Volunteers.

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## APPENDIX No. 4.

### EXTRACTS FROM REPORT OF MAJ. W. A. GLASSFORD, SIGNAL OFFICER, DEPARTMENT OF PORTO RICO.

At the beginning of the year, July 1, 1899, there existed telegraph lines as follows: One circumvallating the island; two others across it, one of which was a line of two wires, and six branch lines to interior towns.

The wires of these lines aggregated 1,204.5 kilometers in length, and the offices on these lines were 32 in number. This telegraph system had been operated and maintained by the Signal Corps of the Army employing men as operators, repairmen, and builders. Since the occupation of the island by the American forces the Signal Corps has been ceaselessly active in repairing and reconstructing these telegraph lines. This condition of affairs continued until the occurrence of the destructive cyclone of August 8, 1899, which prostrated all wires of the island, so that there was not an instance where telegraphic communication between any two points remained. Much of the wire being old and some of the poles quite rotten from age, the rehabilitation of these lines became essentially a work of reconstruction, except that a number of the old poles, the wire, the insulators, etc., were retained and utilized wherever possible. In places where the material was entirely destroyed new wire was employed, and trees, houses, etc., which were available for wire supports had to be temporarily used.

This work of reconstruction progressed, sometimes slowly on account of the almost impassable condition of the roads, due to fallen trees, landslides, swollen rivers, etc., which rendered the transportation of material very difficult. As communication with San Juan was entirely interrupted, it was necessary for each operator to enter independently upon the work of restoring the line connecting his station. In this was evinced by many of the operators considerable judgment and activity, especially where the material was so thoroughly swept away, and pieces of fence wire, improvised brackets, and insulators had to be used, and coupled with this the fact that some of the line passed over a mountainous country whose slopes were so precipitous and the canyons so wide and deep that in many instances considerable mechanical skill was displayed by stretching wire between supports widely distant.

There has been practically rebuilt a line of two wires across the island between San Juan and Ponce, and a partial line of circumvallation from Ponce to Mayagües, San Juan to Humacao; so that at the present time the lines that yet need rebuilding are those from Ponce to Arroyo and from Arroyo to Humacao, which latter section may not be rebuilt because of the difficult country and the unimportance of the towns through which it would pass. Besides these sections named, branches from Mayagüez to Las Marias, Aguadilla to Lares, Aibonito to Barros have been quite thoroughly restored but not rebuilt. The line from Lares to Utuado and from Adjuntas to Arecibo, also from Manati to Morovis and from Bayamon to Corozal, were abandoned. The sections of line that were maintained under the Spanish régime from Caguas to Comerio, Cayey to Ciales, and from Las Marias to Maricao have never been operated, because the material upon these lines had been allowed to deteriorate by the Spaniards, and at the time of the American occupation was practically worthless; neither does there seem to be any pressing necessity for these lines.

It is proper here to state that the difficulties of maintaining a telegraph line on this island are particularly great, owing to the climatic conditions with torrential rains, and the fact that the luxuriant vegetation growing up to the wires, soon causes partial or total interruption. It is principally from the circular or belt system that communication is maintained with so little interruption, because each station being upon the arc of a closed curve is approached from either direction, so that only on these rare occasions, when a station has the wire broken on each side of it, is communication with that point wholly interrupted; in other words, each station has two outlets. It is for this reason that the service of the telegraph upon this island to its patrons has practically been without interruption, and as the business is handled mostly by expert operators it has been done accurately and expeditiously. This is the more notable from the fact that about 75 per cent of the commercial business is in the Spanish language.

In addition to this telegraph service, a system of heliograph communication has been maintained between Fajardo Light and the Isla de Vieques, a distance of 18 miles, which, connecting with the telegraph system at the former point, has afforded the military authorities at the post of Vieques and the business interests of that island facilities for rapid communication. It has also served as a means of signal drill, in which a considerable number of the Signal Corps men have able to obtain practical experience in the work of visual signaling by sun flash and with powerful lanterns under the varying atmospheric conditions of this climate, both during the day and night. So satisfactory has this means of communication been that it may practically be considered as a fair substitute for cable communication with the island of Vieques. If during daylight the sun was not visible, the use of the lantern at night could be had; so at most the interruption to communication lasted but a comparatively short time, and there has been but one day in the year that communication was impossible.

Besides this system of telegraphic and heliographic communication, telephone service has been had at San Juan, Cayey, Coamo, Aibonito, Humacao, Ponce, and Mayagüez. At San Juan a central station is established, with which are connected the principal offices of the government and the residences of its chief officials. With this central exchange are connected 35 telephones, the wires to which extend not only to the city limits, but to the suburbs of Santurce and Rio Piedras, 3 and 7 miles distant, respectively. At Cayey and Aibonito the posts and offices in the towns have been connected. At Humacao the post, the port 5 miles distant, and the village of Naguabo have been connected. At Ponce the port, post, and somewhat widely separated offices in the city have been placed in communication with each other. At Mayagüez the same has been accomplished. A telephone is also used between Lares and Aguadilla, upon which line are also telephones at the villages of San Sebastian and Mocha; also from Aibonito, through Barranquitas to Barros, a long-distance telephone having been placed at each of these points. A telephone has also been used on the main line at Canovanas, a point a short distance east of Carolina.

Successful experiments have also been conducted with the long-distance telephones between San Juan and Ponce, a distance of 85 miles, and with intermediate points. The results attained indicate that a telephone service of this kind could be efficiently operated over the longest line that it would be practicable to build in Porto Rico.

The Signal Corps barracks have been continued, with First Lieut. F. M. Jones, Signal Corps, United States Volunteers, in command. Lieutenant Jones has acted as property officer and company commander; in addition he has been engaged in the work of rebuilding the lines and managing the work of transportation of material. He also acted as signal officer of the department, acting assistant quartermaster, and acting commissary of subsistence during my absence, from May 10 to June 30, 1900. These duties have been actively and satisfactorily performed.

Of the personnel of the enlisted force in Porto Rico much could be said favorably. So generally satisfactory has the work of these men been that the greater portion have been made noncommissioned officers. The energy displayed by many of them after the cyclone in restoring the lines was such as called for their promotion.

The work of the clerical personnel of the signal office, like that of the operators at detatched stations, has been satisfactorily performed.

It is gratifying also to state that the following men of the Signal Corps have been promoted during the year to the rank of commissioned officers: First Lieut. William W. Bessell, Porto Rico Regiment, United States Volunteers; Second Lieut. Clarence N. Jones, Tenth Infantry, United States Army; Second Lieut. John R. Waugh, Thirty-ninth Infantry, United States Volunteers; Second Lieut. William E. W. MacKinlay, Forty-fifth Infantry, United States Volunteers; Second Lieut. Otto B. Grimm, Signal Corps, United States Volunteers.

[Report of August 31, 1899.]

On the 7th warning of a hurricane was received in the following message: "Hurricane signals ordered displayed here at 11 a. m. to-day; storm central off the island of Dominica." This warning was immediately sent to all telegraph offices on the island. The center of cyclone passed over Porto Rico, entering at Arroyo and leaving it at Aguadilla, from early morning until nearly noon on the 8th.

On the morning of the 9th it was found that all communication was destroyed and all lines in and near San Juan were prostrated. Although considerable damage was done to property, the city of San Juan and vicinity escaped with comparatively small losses.

On the morning of the 9th a repair party under Lieut. F. M. Jones, Signal Corps, United States Volunteers, was formed, which included all the available Signal Corps men at and near San Juan and a party of natives hired for the purpose. This party was instructed to recover as quickly as possible one wire from San Juan to Ponce. At the same time Signal Corps men were sent mounted to inspect and report on condition of lines and material necessary to repair them on the following sections: San Juan to Arecibo, Arecibo to Ponce via Utuado and Adjuntas and return to San Juan; from San Juan toward Ponce over military road and return to San Juan; San Juan to Humacao via Fajardo and return via Caguas. A man was also ordered from Ponce by cable to proceed toward San Juan on toward Mayaguez, and another toward Guayama. Word was also sent to operator at Arecibo to inspect toward Mayaguez, and the operator at Humacao toward Guayama. Every effort was made to obtain information of damage done and material necessary to restore communication. It was very soon learned, however, that the damage was so great that few if any of the lines could be permanently repaired without an unwarranted expenditure, which would be more expensive in the end than to rebuild the more important sections.

The condition of lines after the storm and action taken to recover, as reported by men sent to inspect, operators, and repairmen, was as follows:

*San Juan to Aibonito.*—The wires in the city of San Juan were nearly all down, crossed, and tangled with the city telephone and electric-light wires. These were all quickly repaired by the San Juan office force, all of whom afterwards joined Lieutenant Jones's repair party.

*San Juan to Rio Piedras.*—On this section our poles carry 4 wires. Running parallel to our line for some 5 miles are the poles of the city telephone company, carrying some 30 or 40 wires. The lines on this section were all down and in most places hopelessly tangled with those of the telephone company. Very few poles were left standing, many were broken, and more rotten and worthless. Although Lieutenant Jones had a large party at work, owing to the many difficulties encountered and the inexperience of most of the party in this class of work, it took until the 15th instant to reach Rio Piedras with one temporarily constructed wire.

In the town of Rio Piedras quite a number of the houses were unroofed and many of the smaller ones entirely destroyed. There was no loss of life and the damage done was comparatively light.

*Rio Piedras to Caguas.*—On this section our poles carried 3 wires. The entire section was down; scarcely a pole remained standing. Lieutenant Jones continued with his party toward Caguas. Sergeant Vining and Corporal Garrity, with another wagon and outfit, hired natives, went on to Caguas, and worked back to meet Lieutenant Jones's party. The repair of this section was practically rebuilding, and really more work, as the tangled and rotten condition of wires and lack of poles made it especially difficult. Communication was established with Caguas and Humacao on the 18th instant, and Lieutenant Jones with two of the San Juan office force were ordered back to San Juan.

At Caguas the town was badly damaged and many houses destroyed, scarcely any escaping damage. The office was badly damaged, doors and roofs blown off, and some of the signal property damaged and lost.

*Caguas to Cayey.*—On this section nearly all poles remained standing, but wires were all down and about three-fifths of the insulators broken. This was the last portion of the section to be finished, owing to its being the meeting point of the parties working from Ponce and San Juan. On the 17th instant the party started from Caguas. Later a party took up the work in the center, and Sergeant McGuigan's party working from Ponce was met and communication between San Juan and Ponce established on the 20th instant. Owing to the destruction of the Ponce battery and the poor insulation of line, and because of its rapid temporary construction, it worked badly, and it was necessary to relay all business for Ponce and Cayey.

Cayey suffered much damage from the storm. All lesser buildings were totally destroyed, as well as many of the best and largest. The large stone barracks, the hospital, stables, and Government storehouse were totally destroyed. The telegraph office was also badly demaged, but most of the Signal Corps property saved by the operator. Thirty-eight deaths are reported and many wounded. None of the military were killed, but several soldiers injured, more or less.

*Cayey to Aibonito.*—This section probably suffered less than any north of Aibonito. Comparatively few poles were down. The wire, however, was nearly all off the poles, badly tangled, and many of the insulators broken. First-Class Private Jos. T. Bauer, operator at Aibonito, deserves much credit for his prompt and efficient work on this section, he with two soldiers having temporarily repaired the entire section between Aibonito and Cayey.

Aibonito also suffered heavily from the effects of the hurricane, and at Cayey barracks, hospital, and stables were destroyed. Sixteen natives were reported killed and many injured. The telegraph office escaped with no further damage than two holes in the roof, and there was no loss of signal property.

*Ponce to Aibonito.*—This section was repaired by parties from Ponce under the direction of Sergt. L. G. McGuigan, Signal Corps, in charge of Ponce office, who deserves great credit for the able and energetic manner in which the work was pushed forward. Although badly damaged and in many places entirely destroyed, the line south of Aibonito was not so badly damaged as north of that point, except at the river crossings and in the towns. Between Ponce and Coamo the line was in the worst condition, and was opened by Sergeant McGuigan's party, assisted by Corporal Wamba's regular repair party, within four days.

*Coamo to Aibonito.*—Although the wires were nearly all down and tangled, the poles were mostly standing; line was repaired and communication between Aibonito and Ponce reestablished on the 18th. This party then continued, accompanied by Private Bauer, to Cayey, and worked from that point toward Caguas until the party from San Juan was met, and communication between San Juan and Ponce reestablished on the 20th instant; then returned to Ponce, improving the line as they went.

All of these repair parties hired native laborers and some transportation; hence considerable unavoidable expense was incurred.

The city of Ponce suffered heavily from the storm and flood which followed. Between four and five hundred people were reported killed and injured and the loss to property was very great.

The telegraph office was rendered uninhabitable and it was necessary to move the office to another building. The following extract from report of Sergeant McGuigan partly illustrates the great damage done:

"Half of our building completely demolished and wall around yard completely overturned. Our yard and rear of the building has 4 or 5 feet of mud and débris filled with dead animals, fowls, and human bodies tightly jammed. Battery room destroyed and many cells broken, severing all main-line connections, while all city lines destroyed. River rose and flooded office, compelling us to vacate, and after falling left 6 inches of mud on the floor; building rendered unserviceable."

Considerable signal property was destroyed and lost.

*Playa Ponce to Ponce.*—This section was entirely destroyed. It was rebuilt and put in good shape by Private Murch, operator at the playa, with six native laborers hired for the purpose, on the 18th instant. Private Murch inspected and made reports on the Ponce-Guayama section as far as practicable for him to travel. He used good judgment and was prompt and energetic in his work.

*Caguas to Humacao.*—On the morning of the 10th instant First-Class Sergt. Geo. A. Robinson reported in the signal office at San Juan from Humacao, after an exceedingly hard trip, bringing the first news from that badly stricken town. He reported the line from that point to Caguas almost entirely down. On the next day after being supplied with a quartermaster wagon and teamster and such supplies as were available, he returned and continued the work of repairing this section, which had been started prior to his starting for San Juan. On the 17th instant this line was completed to Caguas, and Sergeant Robinson was continuing on to San Juan with the second wire when ordered to assist with his party between Caguas and Cayey, after which he continued with the second wire to San Juan.

Humacao suffered terribly from the storm. The town was practically demolished. Over 100 persons were reported killed and many wounded. The office building was badly damaged and considerable signal property lost and destroyed. One Signal Corps mule was killed in the storm.

*Rio Piedras to Humacao via Fajardo.*—This section as far as Fajardo was left in comparatively fair condition; many poles were down and almost all the wire. Corporal Remsberg, from Fajardo, and Sergeant Ryan, from the light-house, reported to San Juan. On the 11th they were furnished a wagon and material, and with a small party of natives repaired the line through to Fajardo, reestablishing communication on the 24th. From Fajardo to Humacao very little of the line is left standing, most of the poles are washed away, and the line is practically, so far as known, gone. No work has been done on this section. The town of Fajardo escaped with little damage and no loss of life.

*Fajardo* to *Fajardo Light.*—This branch is also all down and practically lost. A few of the poles may be recovered and used for repairing other sections.

*Humacao* to *Arroyo.*—This section is entirely destroyed. It runs through an exceedingly rough country. The material is old and rotten, and is not worth recovering. No work has been done on it as yet.

*Arroyo* to *Ponce.*—From Arroyo to Guayama line left in fairly good condition, and repaired with little difficulty. From Guayama to Ponce in fair condition, but in some places entirely carried away for miles. Corporal Cole, operator at Guayama, is trying to establish communication with Ponce, working a small gang of native laborers. Later a party will start work from the Ponce end.

The towns of Guayama and Arroyo suffered heavily, but both telegraph offices remained intact, as did the office at Santa Isabel. The office at Salinas, however, was totally destroyed. There is no communication between Ponce and Guayama at this date—31st.

*Aibonito* to *Barros.*—This section was considerably damaged, but was repaired by the operators at Barranquitas and Barros, and will be used as a telephone line. Both towns are badly damaged. No signal property as yet reported lost.

*San Juan* to *Mayaguez; San Juan* to *Arecibo.*—Line all down, scarcely a pole standing; in many places both poles and wire washed away for many miles. Early after the storm much wire and many poles were stolen from this section. The railroad company had their wire on our poles, so but little work was done until the railroad people began setting up the poles, when two of our men followed, stringing our wire from Maniti toward San Juan, and later another party from Arecibo toward Maniti.

This section must be rebuilt to be permanent.

The branch lines from Bayamon to Corozal is almost totally destroyed and will be abandoned.

The branch from Maniti to Ciales is also badly damaged, and will not be repaired at this time, but may later be used for telephones. All towns on this section suffered severely from storm and flood. At Arecibo there was a great loss of life and property. Damage to Signal Corps property not yet known.

*Arecibo* to *Quebradillas.*—This section, while badly damaged and nearly all the wire down, was not in such bad shape as some others. Communication was established on it on the 17th instant by Sergeant Wood and Corporal Coleman. Between Quebradillas and Aguadilla the line was very badly damaged, and in sections entirely gone. This section was repaired by Sergeant Grimm's regular repair party, assisted by Sergeant Roberts and Private Fitzgerald.

*Aguadilla* to *Mayaguez.*—This section was also repaired by Sergeant Grimm and Sergeant Roberts, and communication from Arecibo to Mayaguez was completed on the 24th instant. The railroad company put up some of the poles on this section.

The town of Mayaguez suffered heavily. The roof of the telegraph office was blown off and the building rendered uninhabitable, and considerable signal property damaged and lost.

*Mayaguez* to *Ponce.*—This section seems to have suffered worse than any. Between Yauco and Mayaguez it was entirely carried away for many miles. Between Yauco and Ponce, while not quite so bad, the poles are nearly all down. The line from Yauco to Guanica is totally destroyed and carried away.

Three parties are at work on these lines, but as yet have not established communications, except between Ponce and Yauco.

Sergeant Powers and Corporal Brennan have been tireless in their efforts to restore this section, and it is expected to be opened in a few days.

*Ponce* to *Arecibo* via *Adjuntas.*—The section Ponce to Arecibo via Adjuntas and Utuado, and Utuado to Aguadilla via Lares, are all down, and it has not been practicable to do any work on them as yet. Between Ponce and Adjuntas the line is almost totally destroyed and buried beneath landslides; also between Arecibo and Utuado. Between Lares and Aguadilla it can be recovered and put in condition for telephones at little or no expense.

The plan for reconstruction, offices to be continued, and those at which telephones are to be substituted has already been submitted, and it is thought that little, if any, change in these plans will be necessary, unless that perhaps it will be practical to recover at small expense the lines from Rio Piedras to Fajardo and from Ponce to Arroyo, in which case the telegraph at Fajardo, Guayama, and Arroyo may be continued.

## APPENDIX No. 5.

### EXTRACTS FROM REPORTS OF LIEUT. COL. JAMES ALLEN, SIGNAL OFFICER, MILITARY DIVISION OF THE PHILIPPINES, MADE UNDER PROVISIONS OF PARAGRAPH 1541, ARMY REGULATIONS.

[Report of July 1, 1900.]

At the beginning of the fiscal year there were in existence 139 miles of lines, connecting the various headquarters and outposts of troops in the field in the vicinity of Manila as they existed at that date.

During the year there has been constructed 610 miles of field and flying telegraph line, 2,518 miles of semipermanent and permanent lines, 200 miles of cable, and 150 miles of telephone exchange lines, the total constructed for the year amounting to 3,475 miles of land lines and cables.

At the end of the year there were in operation 3,007 miles of land lines and cables, with 301 telegraph and telephone offices in direct communication with Manila. In addition, telephone exchanges have been established at Manila, Iloilo, Cebu, and a a number of small systems connecting outposts and neighboring garrisons in Jolo, Cavite, Santa Cruz, Imus, Bohol, etc., with 125 offices, making the total number of offices 426. Material has also been forwarded for the construction of similar systems at Zamboanga, Cottabato, and other points in Mindanao and Leyte, from which no treports have been received.

The field lines were employed for keeping the headquarters of the various cooperating expeditions in communication with each other and with the commanding general at Manila. These consisted of either uninsulated wire laid upon the ground or upon bushes and trees, and operated with field kits of the vibratory type, commonly called buzzers, and later replaced by pole construction, or of insulated wire, extending the regular Morse system. Some of the field lines were recovered, others abandoned, and in some cases they were completely destroyed by insurgents.

Following up the field lines came the semipermanent construction on such poles, generally bamboo, as could be quickly procured. Bamboo poles, or any of the softwood poles of the islands, last but a very short time. Fine-looking poles, 6 or 8 inches in diameter at the base, are found at the end of a few months either rotted off or eaten up by ants near the surface of the ground. Hard-wood poles being difficult to procure, permanent construction was frequently delayed on that account. Most of the trunk lines have, however, been reconstructed with hard-wood poles that are expected to last a year and a half or two years. Later on, when it is possible to procure such wood as ipal and yacal, the life of poles will be much longer, and no doubt iron poles could be advantageously used.

All the lines have required incessant watchfulness and constant repairs, although, perhaps, as much as 90 per cent of the line trouble has been the result of cutting by insurgents. The duty of repairing has been one of great hardship and personal danger. During the year 4 men have been killed, 2 missing (killed or captured), 2 wounded in action, 4 captured, 3 died of disease, 5 accidentally wounded, and 20 sent to the United States for treatment. Two native linemen have been killed and 2 injured. A large percentage of the sickness has been the result of exposure incident to the work.

The operators have been on duty from twelve to fourteen hours every day. The number of messages sent and received during the last six months averaged 154,232 per month, increasing as the lines were extended. Two million five hundred thousand words were transmitted by telegraph during the month of June, 1900, and in addition to this, a large volume of business was transmitted exclusively by telephone.

The system of communication in the Philippines consists of the Eastern Extension, Australasia and China cables from Hongkong to Manila, 736 knots; Manila to Iloilo, 392 knots; Iloilo to Bacolod, 25 knots; Iloilo to Cebu, 167 knots; a military cable, Cebu to Ormoc; military land lines on the islands of Luzon, Panay, Negros, Cebu, Bohol, and Leyte; and the visual signal systems between the islands of Cebu and Bohol and Cebu and Negros. Over this system is transmitted daily from Manila observatory the time of the one hundred and twentieth meridian at 11 o'clock a. m. Ships' chronometers may be compared at all offices. In the vicinity of Manila the captain of the port's office, the naval station at Cavite, and the office on Corregidor Island will be found most convenient.

Vessels passing Corregidor Island will be reported when displaying their number by international code. The lookout and signal station is at the light-house.

The extension of the system, which it is hoped to complete by the end of the year, includes a cable from Jolo to Zamboanga, Zamboanga to Tucuran, Tucuran to Cottabato, Misamis to Dumaguete, Dumaguete to the island of Cebu, west coast of Samar to the island of Masbate, thence to Donsol on southern Luzon, and the extension of land lines to all garrisoned posts.

The material, except poles, has been distributed for an entirely new 5-line wire from Manila to Dagupan. Along the line of the Manila and Dagupan Railroad poles are being purchased as fast as they can be procured, but there has been great difficulty experienced in securing poles of proper size and of a suitable wood. Many of the lines will require repairs to the extent of almost rebuilding during the next dry season, and poles are being purchased for that purpose as opportunity occurs.

The laying of submarine cables has been under the direction of Maj. J. E. Maxfield, Signal Corps. Through his efforts the cable on the wrecked ship *Hooker*, together with the machinery and equipment was recovered, and 149 miles of cable repaired and successfully laid. The cable as recovered was coiled on the dock near the mouth of the Pasig River, and was exposed to the intense heat of this climate from its recovery, in October and November, 1899, until its final disposition in May and June, 1900. Portions of the cable were strained by the handling received during recovery and the insulation resistance lowered from exposure, but all of it has been working satisfactorily since its submersion. The sterling properties of this type of cable, both electrical and mechanical, reflect extraordinary credit upon the American manufacturer, and taken in connection with the history of similar cable laid during the Spanish-American war would seem to settle conclusively that for military purposes, cable with a properly constructed rubber insulation, is the best type that can at present be designed. Had this cable been insulated with gutta-percha twenty-four hours of exposure would have rendered it entirely worthless.

Major Maxfield, in his report, commends Mr. Strubel and Mr. Henry Winter, cable engineers, for the excellent work done by them; also Lieutenant Kennedy, First-class Sergeant De Kast, Sergeant Bohler, and Cable Seaman Kock. The cable crew consisted of 30 natives, who developed great adaptability for the work. Four of them have been permanently employed.

Lieutenant Stamford and 10 men, fully equipped for signaling and for building 150 miles of telegraph line, accompanied the Ninth Infantry, the first regiment sent to China. Major Scriven sailed on the 21st for China, and a small detachment will go on the next steamer.

The loss of even this small number of men has been felt, the extension of lines and the multiplication of offices having left no margin of men for emergencies.

The demand for operators in the island has demonstrated the fact that a sufficient number of suitable men can not be easily procured and retained if required to do the amount of work demanded for the inducements offered. To keep the force in the Philippines up to its present number during the coming year will require 10 new men per month. The average number received from the United States for the last ten months was 22, and 4 men per month were transferred from the line. The present number of operators is inadequate, and to provide for the extensions in Mindanao and the Visayas 15 new men should be sent out each month. The reduction of the number of troops in these islands will not lessen the demand for telegraph offices, and in order to provide for the year 1902 as many young men as possible should be enlisted, with a view of giving them a year's instruction at the signal school at Fort Myer.

Appended is a list of officers of the Signal Corps serving in the Philippines during the year.

Maj. Richard E. Thompson was chief signal officer of the Division of the Philippines from July 25, 1898, until December 20, 1899. All of the operations of the Signal Corps were under his personal and direct supervision during that time, and which includes the first half of the year covered by this report.

Maj. George P. Scriven was chief signal officer of the Department of the Visayas from November, 1899, until July 21, 1900. His able and energetic management has resulted in the present extended system of communications throughout the Visayan Islands.

Capt. Edgar Russel, chief signal officer of the Department of Southern Luzon, has been on duty in the Philippines since August 24, 1898. He has rendered invaluable service in the field and as chief signal officer of the department. In addition to his other duties Captain Russel has been in charge of the telegraph and telephone lines in the city of Manila and of the Signal Corps machine shops. His report is appended.

Capt. Daniel J. Carr, chief signal officer of the Department of Northern Luzon, has been on duty in the Philippines since August 12, 1899, and has shown marked ability and untiring energy in the field and in the management of lines in his department.

Attention is respectfully invited to the detailed reports of the chief signal officers of the departments, appended hereto, and especially to the record of the officers and men. The services of these officers and men, characterized by valor, fidelity, and ability, commend them to the Executive and the Congress in future appointments and legislation.

[Report of August 25, 1900.]

We have had a tremendous amount of line cutting. This interference with lines continued during the month of August, and in addition to other difficulties we have had an extremely severe typhoon. During the entire typhoon communication was kept up with Aparri, and a great part of the time with the Camarines; now, however, that a great amount of the rain that fell during the typhoon has gotten into the rivers, it has rendered many of them impassable, and it is impossible for repairmen to get at the line. The railroad is washed out, and has been for some weeks, between Manila and Dagupan. While many places are cut off from Manila the local systems are working very well, and all the absolutely essential communications are maintained.

The amount of work being performed by the men is telling very rapidly upon the health of the command. We are losing men continually by death, and the sick report is growing. We got a few men from the line, and General MacArthur transfers without hesitation any man who applies. This source of supply, however, is a very meager one and will soon be exhausted. I can offer no suggestions as to how men may be procured, but it is essential we have them from some source.

The 2 officers and 7 men on the *Grant* were, as you will have been informed before you receive this, diverted to China, and all the supplies that could be taken off were also taken by Major Scriven. Until the *Grant* is unloaded it will be impossible to say what went there and what came here.

The 30 men that you informed me were on the *Sherman* will help us out immensely. The only possible suggestion I can make is to repeat the one I have already mentioned two or three times—to work the school at Fort Myer to its full capacity. The demand for operators from now on I have no doubt will be even greater than it is now, so that every encouragement should be given the young men to go to Fort Myer and keep them there, if necessary, an entire year.

[Report of December 27, 1899.]

The great amount of territory taken possession of by our troops is requiring an extension of lines entirely beyond that heretofore contemplated. We are building one line of 287 miles, Aparri to Cabanatuan, where it connects with line already erected to Manila. We have two lines to Dagupan from Manila, and an extension from that point northward to beyond San Fernando. Lieutenant Duffy is building from Vigan southward to connect with this line.

Captain Carr is with General MacArthur extending the built lines, and we have a large number of offices on the branch lines in the northern district, and also a great many south of Manila as far as Los Banos.

* * * * * * *

There is a tremendous demand for operators, and they should be pushed forward as rapidly as possible, running the force up here to at least 400 men. There is no use of sending any more linemen, but as fast as operators can be secured they should be sent out, if only two or three men at a time, as every man counts.

Saulsbury, the photographer, is still a prisoner, and we are doing no work in that line.

[Report of December 30, 1899.]

I am very much encouraged by your telegram announcing that the supplies asked for are on the way, as we have not a single mile of any kind of light wire or insulated wire left.

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Mindanao seems to be an important island, and, of course, we are anxious to have communication with it, but to run a cable to Zamboanga would require a very long cable, and it perhaps would be questionable whether the expense would be justified. If we run a cable from Bohol to Mindanao it will be very difficult to keep up land lines on account of the tremendous growth of vegetation.

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As there seems to be some difficulty in securing operators, I can only suggest that young men be enlisted for Fort Myer and pushed through as rapidly as possible. We certainly will have to have at least 100 more men. The present wires will barely carry the military work and central office is worked to its full capacity, and it will be impracticable to do any large amount of commercial work until we have more wires and men.

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[Report of January 13, 1900.]

Extensions of permanent lines are being built from Vigan north, by Duffy; from Dagupan westward to Lingayen, Alaminos and thence southward to Iba. Stamford came in last night and is going to Subig to build northward to Iba. Carr has been extending his lines a short distance in various directions.

The principal events have been in connection with the campaign in the provinces of Cavite and Batangas. When the campaign opened lines extended as far as Imus and cable to Calamba. General Schwan's column started from Taguig and moved down the coast of the Laguna de Bay to Binan. Colonel Maxfield followed along the coast with copper cable and landed at Binan with troops. While these lines were being laid an insulated line was laid from Imus southward to Das Marinas, following General Bates and later on continued to Silang. When General Schwan arrived at Binan he was followed by Clarke with the naked copper wire taken from the copper-armored cable. This line he continued from Binan to Silang, Indang, and on to Naic. Here is 30 miles of line which has been working successfully for several days, laid on the ground without insulation. It is the small copper wire taken from armor of copper cable.

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Clarke left this morning with General Schwan's command for Calamba. Will continue the line from Calamba to Batangas.

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We will extend as rapidly as possible to San Pablo and Rosario and probably from Silang to Talisay.

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[Report of January 23, 1900.]

Lines on the west coast north of Vigan and Lingayen to Subig are being pushed along. I have sent 600 poles, and we are building a permanent line across the country from Calamba to Batangas. Lieutenant Gibbs is extending the line from Pasig to Morong, on Laguna de Bay. Lieutenant Clarke is with General Schwan. I have not heard from him for several days. Expect any moment they will arrive at Santa Cruz.

Got the new dynamo running yesterday and fitting up storage batteries and connect it to-day, and hope to begin charging this afternoon or to-morrow. This will release several hundred cells of gravity battery, which are imperatively needed at other points.

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[Report of February 7, 1900.]

The line on the west coast of Luzon is extended from Lingayen southward to Santa Cruz, where the construction party under Lieut. Lenoir has been for the last ten days, being stopped by the commanding officer, owing to the presence of large numbers of the enemy.

Lieutenant Stamford started in at Subig to build to join Lenoir, but after several days' work, and some fighting, construction has been stopped temporarily. Lieutenant Stamford's report follows.

An expedition will soon start from Santa Cruz south. One from Subig and one from Iba. It will probably be a couple of weeks before the country is at all cleared up.

* * * * * * *

Captain Carr is still continuing construction in his district.

South of Manila a cable has been laid to Santa Cruz, and land line from Los Banos to Bay and from Santa Cruz to Tayabas and to San Pablo.

* * * * * * *

We have all the command connected up at present, but with so much line cutting, extension work, and rebuilding, the corps is worked to its capacity. The principal line left to be rebuilt is that from Tayabas southeastward across the island to Sorsogon.

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[Extract from report of Lieut. H. W. Stamford, February 1, 1900.]

In connection with the work of constructing telegraph communication from Subig north toward Iba, I have the honor to make the following report:

The first section of 5 miles, Subig to Castillejos, was constructed in part of insurgent wire recovered in the neighborhood and without interference from the enemy.

* * * * * * *

On the 30th left San Marcelino at 6.30 a. m. and continued construction toward San Narciso, worked in wooded country until noon and then entered open country. By testing found line had again been destroyed behind me. At about 4 p. m. the corporal in charge of the advance reported seing a body of men acting in a suspicious manner. Going forward to the "Point" I climbed a solitary tree by the roadside, and with the aid of field glasses could very distinctly see an insurgent officer, with sword in hand, directing the disposition of his company, placing his men in skirmish line on the crest of a bank of a small stream which commanded a view of the open road. His position was well chosen, himself and men being concealed by very long wild grass. A hasty survey of the ground showed me that by deploying my command to the right I could possibly outflank their position, and by advancing in a stooping position through the long grass, reach a point within 100 yards or less of their position. This course was adopted, deploying rapidly to the right as skirmishers at 5 yards interval I advanced the line until the bank on which insurgents had formed could be seen through the grass. Passing the word to fire low, I delivered three volleys, which were returned by Mauser fire by the insurgents. Heavy firing now followed on both sides, lasting from ten to fifteen minutes, when I gave the order to advance by rushes, having to clear two open spaces and mount the bank beyond which the enemy were posted. Had the pleasure of seeing the enemy in full retreat toward our right front. No sooner had they cleared our front, however, than what was evidently their main body opened on us from a direct front, sending in very good volleys. A few more advances and heavy volleys delivered at the timber silenced their fire completely.

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I am of the opinion the ambush was planned with a view to engage me in the front and then cut off our train as a fire was opened in the rear, which the rear guard soon silenced. It also happened I had sent back orders during the engagement for the train to hurry forward and get in more secure position.

* * * * * * *

January 31 receiving reliable information that the country from Subig north contained not only many organized bands of insurgents but the population were in full sympathy with them, the line being again destroyed behind me, I deemed it advisable to return to Subig and report conditions before going farther.

Leaving San Marcelino at 7 a. m. we reached Castillejos at about 10 a. m. Here I obtained some information as to the engagement which had taken place two days previous and ascertained that a portion of our troops engaged at barrio, just south of Castillejos, had fallen back to Castillejos, there forming a junction with the other "soldiers" (evidently Lieutenant Bates and company), had again returned to the attack. It was not until my arrival at Subig that I learned Lieutenant Schenck had been very heavily attacked, Schenck and 3 men killed and 4 wounded, and his scouts forced back on Castillejos, where Lieutenant Bates' timely arrival changed the nature of events. To accomplish this Lieutenant Bates must have kept at a steady double time for a distance of not less than 2 miles or more.

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There are two very difficult places on the Subig-Castillejos section of the road, viz, the pass referred to in the first part of this communication, and the barrio where Lieutenant Schenck and scouts had been engaged. The barrio was passed by flanking so as to command the road in case bull train was fired on from that point, and the pass approached by sending flankers each side in the brush to occupy the rifle pits on the summit. The difficult work of getting the slow-moving bull carts up the pass had gone on so favorably that all thought of attack was about forgotten. A few shots were fired and then a heavy fire started from both sides of the mountain slopes commanding the summit and pass. The bull drivers, who, by the way, are natives of this section of the country, deserted at the first fire.

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Nothing could be done but take a position at the bottom of the pass that commanded a view of the slopes and send in volleys at a concealed enemy. At the foot of this pass on the Subig side is a trench commanding the Subig road but in open view from the mountain sides. The bulls, left to themselves, stampeded and formed a block at the foot of the pass. The situation was therefore as follows: I must either temporarily leave the carts in their present position and await reenforcements, which I knew my volley firing would bring from Subig, or work my men in the open, exposed to the fire on both sides, to pull the carts, many of them now without bulls, and all, with the exception of two, without drivers. I decided on the former and returned later with Lieutenant Enoch's command and recovered most of the carts and property.

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I desire to bring to the notice of the Chief Signal Officer the conduct of First-class Sergeants Nordquist and Hall, United States Signal Corps, and to recommend these men for certificates of merit for gallantry and coolness displayed in these two affairs. Sergeant Hall's excellent conduct on the skirmish line did much to inspire the other men. Both these men were the last two to leave the cut in the pass, doing what they could to bring the then stampeded bulls over the summit, the last man over the pass being Sergeant Nordquist leading his captured pony.

[Report of March 5, 1900.]

I sent you sometime ago report of a fight had by Lieutenant Stamford. I inclose herewith copy of report of Lieutenant Lenoir, who, although he had 50 men, was attacked by insurgents and finally, after being reinforced by 50 additional men, succeeded in driving them off.

Lieutenant Lenoir completed the line a few miles south of Pototan, but we have not been able to maintain any station south of Iba up to to the present time.

Lieutenant Stamford came in recently for additional supplies, and returns to-night to Subig. The line will be completed as soon as the condition of the country will permit, but will probably require a very active campaign before matters are settled there.

The lines south of Santa Cruz (Laguna de Bay) have practically been abandoned for the last week. The line has been cut in innumerable places and a large portion of it carried away. Lost 1 man—taken prisoner.

Lieutenant Lyman accompanied General Bates' expedition to Nueva Caceres.

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Owing to the condition of the country it will probably be impossible to build the line from Santa Cruz through southern Luzon to Sorsogon during the dry season. Material for building the line from Sorsogon to Legaspi and northward to Nueva Caceres is on the ground and Lieutenant Lyman will put it up when he can.

[Extract from report of Lieut. B. O. Lenoir, March 31, 1900.]

Four miles south of Dasol insurgents ambushed us from a rocky ridge covered with bushes, 50 yards from and parallel to the road. I sent about 15 men around on their left to give them a flanking fire while the remainder kept up a rapid fire from the front. In one-half hour they had retreated.

Going into Dasol we were again ambushed from both sides of the road at the same time. Divided the guard into three parts and succeeded, in one hour, in driving them completely off of the field. A few bamboo shacks having been fired during the heat of the engagement, the wind swept the flames into Dasol and almost completely destroyed the town.

On road from Dasol to San Isidro the country was open and the insurgents could be seen on each flank following us. I sent a detachment after them, but they retreated.

[Extract from report of Lieut. B. O. Lenoir, February 19, 1900.]

The telegraph line has been cut north of Iba by the insurgents, thus cutting me off from Dagupan. I trust the commanding officer in my rear may see that this break (or breaks) is repaired.

Yesterday about 3 p. m. I saw a gunboat off Panan throw 2 shells into, as I supposed, Panan. The gunboat appeared at anchor with 1 banco at its stern.

My party appeared on the beach about 1 mile north, and from the number of Filipinos in my party I was apprehensive lest the gunboat shell us; however, it did not, and as we approached the gunboat went north.

We necessarily proceeded slowly as we were stringing new wire. As I was within a half mile of Panan, in dense shrubbery, my advance guard was fired into by the enemy, wounding 2 men through thighs in both cases. I brought up my main guard and engaged enemy until wounded were taken to rear, then I fell back to protect my wagon train, as I knew the enemy was endeavoring to cut it off. I took the train toward the beach across an open plain 300 yards wide where I protected it behind sand bluffs; in the meantime our rear guard kept back the enemy. As we reached shelter the engagement became general, insurgents firing from the fringe of timber skirting this open plain, their line extending over half a mile. Through this heavy fire I called in the rear guard, they coming in at double time, as during time of their presence in front they were in danger from our own men behind the sand bluffs. For three-quarters of an hour sharpshooters on both sides were hotly engaged, and through my glasses I was very successful in locating enemy along the fringe of timber.

I was much encumbered by heavy cart train, and feared losing it at one time.

Sergeant Blair and Private Bair I sent back to Bototan for reenforcements, which they reached by creeping along the edge of the sea, and by 7 p. m. I was reenforced by 50 men, and returned to Botolan, bringing in my 2 wounded, where I am now, and probably will remain until I can communicate with General Bell, who was due to arrive in Subig yesterday.

The wire has already been cut in my rear and a desperate attempt to capture my train in front, and should I proceed much farther and have many wounded I will be compelled to abandon some of my stores in order to bring in the wounded.

My train moves slowly and is 16 carts, and the insurgents will make a great attempt to capture it.

My force was 6 signalmen, 47 men companies E and H, Twenty-fifth Infantry, 16 Filipino cart drivers, 16 Filipino laborers, and 12 Chinese.

All men behaved well and with coolness. I sent carts back to-day to Iba for an additional supply of line material, as the line along here is in bad shape.

[Report of April 14, 1900.]

We have done considerable reconstructing during the month. Are trying to build the lines on a more permanent basis. Rickard is still struggling somewhere north of Bayombong, and Stamford is endeavoring to reach the same point from the south. North of Carranglan there has been absolutely no transportation available for signal work. It has been with great difficulty that enough rations and other supplies have been carried through on the few packs available. They are sending up now 100 pack mules, and will endeavor to get some supplies into that country before the rainy season begins.

All the lines have worked extremely well, except south of Santa Cruz, where they have been entirely destroyed by insurgents from Santa Cruz around to San Pablo and by the way of Tayabas. We will start in very soon to rebuild them, all the material being on the ground except poles.

In the Camarines Lieutenant Lyman has been struggling under difficulties trying to keep up lines. An officer who came up the other day said that while they were building they could look back and see bolomen cutting the wire behind them, necessitating stopping building to have a fight with insurgents. We will probably, however, be able to keep up the local line from Pasacao to Nueva Caceres and to Albay.

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We have had great difficulty in getting poles, but at last they begin to come in. I hope to begin Monday morning rebuilding the entire city lines both for telegraph and telephone. My central office establishment works perfectly. There are now ten lines running into it, and it is capable of extension to the number of fifty.

The establishment of the division and departments will simplify administration very considerably.

We have few complaints, and everybody is being well served. I hope the message business has reached highwater mark. It has apparently begun to fall off a little. We ran one or two days over 6,000 messages, which is about the capacity of our plant.

[Report of May 15, 1900.]

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Extensions now in progress are from Cape Bojeador to Bangui and a dozen or fifteen small stations in the northern division to connect up new posts. Lieutenant

Cunningham is building from Taal toward Calaca and Balayan in the province of Batangas. Lieutenant Clarke has just returned from rebuilding the line from Naic to Indang and Silang. Lieutenant Gibbs is out with party and large wagon train, building from San Pablo by the way of Tiaong to Candelaria toward Sariaya, and when finished line will be completed south to Lucena and eastward to Atimonan.

Major Maxfield returned this morning from laying cable from Pasacao to Guinayangan, except the shore end at the latter point. He leaves to-morrow or next day with a company, and accompanied by a small gunboat to the town of Guinayangan, which will be occupied by troops, when Major Maxfield will complete the shore end, and land line started from Guinayangan to Atimonan. A party at Atimonan is now building toward Guinayangan.

We are making a great effort to connect up the southern part of the department with Manila. It is tremendously rough country and it will be very difficult work. The construction party from Guinayangan will be put in charge of First-class Sergeant Kennedy. The cable was laid to get around an almost impassable country between Nueva Caceres and Guinayangan. As soon as Major Maxfield returns from there we expect to connect Naic with Corregidor Island. This will use up all the cable on hand.

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[Report of June 1, 1900.]

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The Aparri line has thus far been a marvel. We have had constant communication with that point ever since it was established and both Rickard and Stamford are making extraordinary efforts to keep it going. General MacArthur and General Wheaton are specially solicitous that communication with that country be not interrupted.

Colonel Maxfield landed the cable at Guinayangan and Kennedy had started on the land line when he left. There are no trails over the mountains and no transportation to be had. The wire will probably have to be packed in small quantities by the soldiers.

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[Report of June 14, 1900.]

Since last writing you the line has been extended to Bolinao and Agno on the northwest coast, and a large number of small lines have been constructed connecting different posts in the northern department.

In the southern department extensions have been made from Morong to Tanay and Binangonan. From Taal to Balayan line is working with buzzer from Santa Cruz to Atimonan. The line that we were building from San Pablo by way of Tiaong is completed to Candelaria, which leaves only 9 miles between that point and Sariaya, when the line will be completed to Tayabas. Nothing has been heard from Kennedy who was left at Guinayangan by Colonel Maxfield, but we hope any day to hear that communication is completed between that point and Atimonan.

The cables in the lake are giving a great deal of trouble. They have been broken by cascos, etc. A party is now being organized to relay the whole system with new cable. The cable to Corregidor was completed and is working very well and is a very important line.

We have got more on hand than we can attend to, but are pushing things as rapidly as possible. Poles are being distributed along the line between Manila and Dagupan. I am trying to build a first-class line of this and am not allowing any hurrying to interfere with that object. It may take some time, but I hope we will have something reliable when it is finished. The great trouble in this country is that construction does not last. It is a continual rebuilding, and repairs are necessary both from natural causes and by reason of cutting by insurgents. Communication, however, has been maintained with but slight interruptions. We are putting our greatest effort on the Aparri line. We have got repairmen at every available point. Two officers are on the line and Lieutenant Mitchell is going up there in a few days. General MacArthur desires that communication be maintained at any cost, as it is a most important country.

[Report of June 22, 1900.]

We have been experiencing here for the last week a very severe typhoon. Lines were blown down miles at a time, and the country generally under water. Under the circumstances the communication kept up was extremely good. Repairmen were at work during all the time, and there are only some extreme points that we can not reach.

The line running from Calamba, Santo Tomas, Tiaong, and Candelaria has now only a few miles' break between Candelaria and Sariaya, which will doubtless be up in a day or two and will get us through to Atimonan.

Lieutenant Kennedy has completed the line from Guinayangan as far as Lopez, and has communicated with Sergeant Berry, who is building from Atimonan by courier, so we expect any day to have that part of the line completed. It will then give us a complete line through to Nueva Caceres and as far south as that line is up. It was at one time completed to Legaspi, but it is doubtful whether it is now working the entire distance. Linemen are keeping it repaired as far as the troops go.

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Lieutenant Stamford and 10 picked men go with Colonel Liscum on the trip to China. I have fitted them out with lots of wire, telephones, buzzers, and telegraph instruments, and have no doubt of Lieutenant Stamford's ability to do most excellent work, as he has heretofore done on these islands.

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[Report of June 30, 1900.]

The line from Guinayangan to Atimonan has been built at least four times, but have been unable to keep up communication between Guinayangan and Manila on account of cutting of line. Have asked for a garrison to be placed at Lopez with a view of protecting the wire.

The lines on the entire island of Luzon have been reconstructed from one end to the other, and are maintained except where cut by insurgents. The last typhoon did considerable damage, but it has all been practically repaired. The railroad about Tarlac is for 2 miles entirely under water, with very little prospect of repairing it during the rainy season. The poles are standing along the route, but in a very precarious condition, and am going to send up 2 miles of cable to lay along the railroad. It is an extraordinary country, where we lay deep-sea cable in the middle of an island. The Aparri line has worked very well, except, as should be expected, we have interruptions of a few hours or a day at a time. Every effort is being made to keep it up, and both General MacArthur and General Wheaton are deeply interested in its maintenance.

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[Report of July 14, 1900.]

It is very gratifying to report that the entire system has been established on the islands of Luzon, Panay, Negros, Cebu, and Leyte. While the cable connects the island of Samar, it has been impossible to carry the land line to Catbalogan, as there has not been enough troops to enable us to proceed with the construction. Additional men have been sent to that point, and we hope very soon to have connection with Catbalogan. It is to be hoped by the end of the year we will be at Jolo, Zamboanga, and other points on Mindanao.

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Lieutenant Stamford and 10 men, as you know, left for China with the Ninth Infantry, and order has just been received for Major Scriven to go. Lieutenant Stamford was very well supplied with field instruments, and also equipped for permanent lines. We gave him 10 of our very best men, and it is next to impossible to spare any more to send from here. I hope to send a detachment of linemen with Major Scriven when he goes. Have been waiting to hear from Lieutenant Stamford to know what the probable requirements would be.

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Notwithstanding the rainy season, we are so far working with slight interruptions. Lieutenant Mitchell is at Solano on the Aparri line, and I have no doubt he will keep that line going, as he is most energetic and efficient. Lieutenant Kennedy's work on the Atimonan-Guinayangan line was extremely good. He has had no end of trouble, and as a matter of fact has rebuilt the line two or three times, as it was cut in no end of places by the insurgents. Two captains of Colonel Gardiner's regiment (whose names I will give you later) have helped him out immensely and enabled him to complete the work.

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[Report of August 1, 1900.]

A great many of the officers and men have been personally commended to me by the line officers and post commanders, and I have asked them in each case to make it a matter of record in their reports. I think the hard work and gallant bravery of a great many of the corps have received almost universal commendation.

General MacArthur has given us a most earnest and liberal support, to which fact, added to the broad and generous policy adopted by yourself, is due the large amount of work accomplished during the year. It certainly has extended beyond what anybody expected it would.

The completion of the Aparri line, owing to the difficulties encountered, was an extremely fine piece of work, and reaching the Camarines was one of the best things that we have been able to accomplish. Lieutenant Lyman has done a tremendous amount of work in the Camarines, and Lieutenant Kennedy's work in getting the line through from Guinayangan to Atimonan was extremely praiseworthy. Lieutenant Wheat is now in that district doing excellent work.

The history of the Signal Corps is written in the reports of the chief signal officers of the departments, and if they can not be published in full, I hope that as liberal extracts will be made from them as possible. You will see by the table inclosed with my report that, based on the casualities of last year, 9 men per month will be required to keep the force up to its present number. The chances are there will be many more casualties this year than last, and, as we are working the men to the absolute limit, there ought not to be less than 15 men per month sent to these islands.

There has been a tremendous amount of line cutting during the month of July, and there seems to be an organized attack upon the line. We lost 3 men in three successive days. There have been a number of cases where repairmen and small squads have been attacked, but have escaped. In some cases they have succeeded in killing or capturing the men who were actually cutting the wires.

When the southern cables are completed, we will have most complete means of communication. The work of extension is still going on to reach the few remaining posts that are not connected with the system.

Captain Carr has just come and says a half-mile line between Cabanatuan and San Jose was cut out last night and 300 insurgents intrenched near Santo Domingo; 5 Americans killed. General Funston is after them and this morning we may expect some result.

## APPENDIX No. 6.

### STATISTICAL EXHIBIT OF TELEGRAPH WORK AND CONSTRUCTION IN THE MILITARY DIVISION OF THE PHILIPPINES.

| Month ending— | Number of miles. | New construction, number of miles. | Number of men. | Messages sent and received. |
|---|---|---|---|---|
| 1899. | | | | |
| June | 189 | 67 | 188 | 60,265 |
| July | 206 | 58 | 243 | 71,217 |
| August | 264 | 7 | 186 | 73,550 |
| September | 271 | 69 | 206 | 98,304 |
| October | 340 | 135 | 246 | 98,000 |
| November | 475 | 413 | 269 | 118,000 |
| December | 888 | 465 | 291 | 142,000 |
| 1900. | | | | |
| January | 1,355 | 285 | 300 | 129,779 |
| February | 1,638 | 326 | 310 | 168,923 |
| March | 1,964 | 268 | 349 | 161,899 |
| April | 2,232 | 176 | 354 | 172,816 |
| May | 2,408 | 449 | 375 | 186,287 |
| June | 2,857 | .......... | 390 | .......... |
| City exchanges | 150 | .......... | .......... | .......... |

*Statistical exhibit of telegraph work and construction in the Military Division of the Philippines*—Continued.

|  | Land. | Cable. | Total. |
|---|---|---|---|
| *Permanent construction.* | *Miles.* | *Miles.* | *Miles.* |
| Constructed July 1, 1899 | 129 | 10 | 139 |
| *New construction.* |  |  |  |
| 1899. |  |  |  |
| July | 42 | 25 | 67 |
| August | 53 | 5 | 58 |
| September | 7 | ........ | 7 |
| October | 69 | ........ | 69 |
| November | 135 | ........ | 135 |
| December | 413 | ........ | 413 |
| 1900. |  |  |  |
| January | 434 | 31 | 465 |
| February | 285 | ........ | 285 |
| March | 326 | ........ | 326 |
| April | 191 | 77 | 268 |
| May | 129 | 47 | 176 |
| June | 434 | 15 | 449 |
| City exchanges | 150 | ........ | 150 |
| Fiscal year | 2,668 | 200 | 2,868 |
| Total completed to date | 2,797 | 210 | 3,007 |

JULY 12, 1900.

## APPENDIX No. 7.

### EXTRACTS FROM REPORT OF MAJOR SCRIVEN, SIGNAL OFFICER, DEPARTMENT OF VISAYAS, PHILIPPINE ISLANDS.

The present signal officer, Department of the Visayas, reported at Iloilo, Headquarters Visayan Military District and First Separate Brigade, Eighth Army Corps, December 1, 1899, in accordance with Special Orders, No. 324, Headquarters Department of the Pacific and Eighth Army Corps; Manila, P. I., November 25, 1899, and on the following day reported in person to Brig. Gen. R. P. Hughes, in the field at Pototan (Panay). At this time the signal force in the Visayan Military District consisted of three detachments: One on the island of Cebu, under the command of Second Lieut. William E. Davies, Volunteer Signal Corps, composed of 1 commissioned officer and 10 enlisted men, who were reported direct to Manila; a second detachment composed of 4 enlisted men stationed on the island of Negros, under the temporary command of Second Lieut. Israel Putnam, Sixth Infantry, assistant signal officer, who were reported to Second Lieut. Alfred T. Clifton, Iloilo; a third detachment under command of Second Lieut. Alfred T. Clifton, signal officer, Panay, composed of 1 commissioned officer and 11 enlisted men.

At this date (December 1) Second Lieutenant Clifton was in the field at Pototan with the commanding general, and with him were 4 privates, Signal Corps, with 1 man, Twenty-sixth Infantry Volunteers, attached. This party was provided with flags, heliographs, and oil lanterns, but had been unable, owing to the character of the country and to cloudy weather, to maintain communication between the command and its base at Iloilo, though strenuous efforts were made to do so. Electric communication could not, at this time, be laid in Panay. Lieutenant Clifton and his detachment accompanied the column of General Hughes on its march to Capiz, and later proceeded to Romblon, where service was rendered with visual signals. Second Lieut. Max Wagner, Twenty-sixth Volunteer Infantry, accompanied by a small detachment, at his own request performed the duties of a signal officer during an auxiliary expedition to Capiz, sent by sea to cooperate with General Hughes.

At various times detachments of the Signal Corps were attached to commands in the field, and on all such occasions acquitted themselves well. I especially desire to commend Private (now First-class Sergeant) Jay M. Faunce, for steadiness under fire when signaling the ships during the action at Antique, Island of Panay, January 18, 1900.

I also desire to mention the conduct of Sergt. Philip J. Golden and Private (now Corporal) Alexander E. Whitworth, Signal Corps, and a detachment from the

Twenty-sixth Volunteer Infantry, in an affair near Oton (Panay) reported to the Chief Signal Officer of the Army, and to the colonel commanding Twenty-sixth Volunteer Infantry.

When transportation was available, as in combined land and sea operations, these parties were provided with flags, acetylene lanterns, Coston lights, rockets, and bombs. The lanterns proved serviceable.

By Orders, No. 41, Headquarters Department of the Pacific and Eighth Army Corps, office chief signal officer, Manila, P. I., December 16, 1899, Company H, Signal Corps, was organized with the following officers and enlisted force: First Lieut. Leonard D. Wildman, Volunteer Signal Corps; Second Lieut. Charles S. Wallace, Volunteer Signal Corps; Second Lieut. Alfred T. Clifton, Volunteer Signal Corps; Second Lieut. William E. Davies, Volunteer Signal Corps; 3 first-class sergeants, 5 sergeants, 4 corporals, 33 first-class privates; total enlisted, 45.

On December 24 Lieutenants Wildman and Wallace, with 19 enlisted men, arrived at Iloilo. The several detachments in the field had returned, and on December 26 the construction of the present telegraph system of Panay was begun in accordance with the plans of the signal officer of the military district, approved by the commanding general. From time to time thereafter the enlisted force of H Company was increased until it reached its present strength of 76.

In regard to the enlisted men of the Signal Corps in the Visayas, I believe it is not too much to say that so fine a body of men is seldom brought together, and that their efficiency, energy, and steadiness have been remarkable. Intelligent and well instructed, they have shown a keen interest in corps work, and, far from needing a spur, have required a check to keep them from continuing on duty when broken with long and arduous service in the field. The difficulties and hardships of constructing communication on these islands have been great, but the men, constantly in the midst of a treacherons enemy, working at times through dense jungles, always in intolerable heat, and frequently in drenching rains, have shown an energy and spirit worthy of the highest commendation.

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## PERMANENT LINE CONSTRUCTION, PANAY.

On December 26, 1899, construction work began on the trunk line from Iloilo to Capiz, north coast. Two detachments were sent into the field, one under Lieut. L. D. Wildman, to build from the vicinity of Jaro, via Santa Barbara and Pototan, into the mountain pass between Passi and Dumarao. A second, under Second (now First) Lieut. C. S. Wallace to Capiz by boat to work south via Panitan, Dumarao, and the pass until it should meet the first party. Second Lieut. Alfred T. Clifton was sent to Bacolod, Negros, as signal officer of that island.

At this time the island of Panay was in a very disturbed condition, bodies of insurgents or ladrones were prowling about the country attacking trains, firing upon transport canoes and small bodies of men and into villages, but no large force could be found and attacked. As a consequence bodies of our troops were stationed at various towns of the coast and interior, and it became necessary to build rapidly a net work of telegraph lines to bring these widely scattered detachments into communication with headquarters. Rapidity of construction was the first essential, but a certain degree of solidity was needed to resist storms. It was unfortunate that no insulated wire could be procured for temporary lines, and that no naked wire lighter than No. 9, G. I. was at hand for the construction of branch lines. Transportation was and has continued to be limited in the Visayas, and the difficulties of carrying heavy wire and large insulators over trails impassable for wheels and even for pack bulls were enormous. All the early line transportation was done with bull carts, bamboo sledges (called carusas), or with carriers.

The construction party under Lieutenant Wildman, consisting of 14 Signal Corps men and 3 men temporarily attached, started with rations, hammocks, and blankets, but no tentage, this being considered unnecessary in a region where bamboo huts fairly line the roads. The occupancy of these shelters, however, brings the risk of smallpox, which is very prevalent in the Visayas, and whenever practicable the men were quartered in the conventual buildings, found in every considerable town, and usually unoccupied. These buildings are of brick or stone and are separate from the churches; many of them were formerly used as schools. Each man was armed with a pistol, but 3 rifles were carried in the bullock carts, of which 5 were assigned to the detachment. In accordance with the instructions of the commanding general, poles were to be cut from the adjacent lands, and the detachment was at first compelled to dig the post holes themselves. This labor, however, soon proved to be so severe for Americans in a tropical climate that the request of the signal officer for the hire of native labor was granted, and after January 1 a party of 10 natives was hired to accompany each squad in the field, in addition to the drivers of the bull teams. Native labor was, as a rule, easily procured by notifying the presidente of a town or the cabeza de barrio to obtain the number of men required, but wages varied in different localities from 10 cents, Mexican currency, per man a day (about 5 cents gold) in the neighborhood of Pavia, to 50 cents, Mexican (25 cents gold), which became the usual rate, and seemed to be established by an understanding among the natives themselves after they had learned the rates of pay in Iloilo, where wages, first fixed at a dollar, Mexican, per day without rations, were reduced to 80 cents per day, or 50 cents with rations. A ration was given to each man engaged in line building of 2 pounds of native rice per day, hard bread, and 1 tin of salmon to 6 laborers. The men thus employed were the ordinary type of Filipino, small, spare, but very wiry; when at work they are almost naked, wearing usually merely a breech clout and straw hat; but they probably possess somewhere at home for Sunday use a pair of white cotton trousers and a gauze shirt, the latter worn in the native fashion—tails out. The hat in the field serves as a plate for the rice, the chief necessity of life, which is simply boiled with a little salt, doled out by the handful, and gobbled standing, or carried, as a dog carries a bone, to some secluded corner and there shoveled from hat to mouth. At first the natives seemed to care little for meat, but they later grew eager for the scraps left by the soldiers, and literally licked the platters clean. Of coffee, too, they became very fond, reboiling the grounds and chewing them after the liquid was gone. Fish are a great luxury, but the main article of food, of course, is rice, of which they prefer the dark native variety to the fine white imported grain—rice from the beginning of life to the end, if only they can get it; but the 3 or 4 cents a day necessary to buy enough for a man's support is not always easy to earn. When at work the natives eat as hearty a meal as possible before leaving camp in the morning, but when not working the morning meal is little or nothing. They work steadily and well for long intervals of time, but are silent, almost gloomy the meanwhile, rarely speaking and with never a joke or a song even in camp when the day's work is over. Back from the field they gather at dusk around the fire where stands the pot of boiled rice. Each man takes his share on hat or on a broad leaf, eats it in some corner, lies down on a bunch of grass or leaves in what shelter he can find and sleeps till day breaks without blanket or cover. They are sturdy workers, but it is doubtful if they have the strength of the white man or can carry his burden. In certain kinds of work, however, such as bearing burdens for long distances, they seem almost tireless, provided they can so adjust the load as to carry it balanced at the end of a stick placed across the shoulders. They are capable also of making enormous journeys over bad roads and mountain trails, but they do not seem strong in health, and have a deadly fear of certain regions traversed by the telegraph, such as the lower slopes of the mountains where fever is prevalent and dangerous. Of medicines and doctors of course they have none, and even when in the hands of our own physicians sometimes resist treatment, with unfortunate results to themselves. The people who are willing to work for the pittance mentioned, are probably no poorer than their neighbors. On one or two occasions, indeed, sons of the chief men of the locality were employed with working parties, a little ready money being a strong inducement to even the more prosperous. With one party, for instance, was the son of the presidente of a town near Iloilo, a man who owned carabao and cattle and rice fields, yet who had so little cash that he could not afford to pay the 10 cents per day it would cost to live in Iloilo even for a few days in order to avoid the robber bands that were constantly visiting him and forcing contributions. In fact, the people in the interior of Panay were at this time miserably poor. They had little to eat but rice and yams; fruit was scarce; chickens, except game cocks, few; and natives could not afford to eat their best friend—the carabao. Cattle and horses are never plentiful, and as for money, a silver piece in the smaller villages could hardly be found. As a rule, there was little difficulty in obtaining labor, though on a later occasion in Antique province, on account of the hostility of the natives, it became necessary to employ a show of force to obtain it. No particular danger from the insurgents ordinarily threatened the natives employed, but these were worked only in their own province and by direction ot their presidente. This, however, was not the case with native linemen later hired, who at all times ran serious risk of life or capture. All labor was paid as nearly as practicable the market price of the locality in which men were hired.

From Iloilo to Santa Barbara the country is low and flat, and the telegraph line follows the road closely. The latter, a well-built metaled highway, runs through strips of jungle of bamboo, and vines interspersed with banana bushes, and cocoanut and bunga trees, and giving place, as the road runs north toward the Aganan River, to fields of cane and extensive rice paddies, in which at this time the grain was ripening. In this section the poles first set up were bunga or betel nut, a small symmetrical palm of just dimensions for telegraph poles, but which experience proved to be useless after three or four months in the ground, for being soft and fibrous the wood shrinks away from the outer shell and becomes spongy and friable as punk. However, speed was important and transportation limited, and the line first built experimentally, answered its purposes well, much better than if bamboo, the other available pole for rapid work, had been used. The wire was No. 9 G. I. and the insulators W. U. standard, and the brackets were both nailed and tied on with No. 9 wire, which was also used for tying in. Poles were sunk 3½ to 4 feet in ground, tamped, and placed at an average of 50 yards apart; later increased. The poles were afterwards replaced by hard wood, or duldul, the native cottonwood, and from the time of its construction has worked practically without interruption, except when cut by the insurgents. Occasionally on the route the remains of the old Spanish lines could be seen in a heavy porcelain insulator or fragment of No. 14 wire, but this had mostly disappeared to give place to a stretch of crude insurgent line of No. 14 wire, attached to shaky bamboo poles, often without insulators. There can be no doubt, however, that the insurgents employed the telegraph to some extent, using the Spanish printing instruments, but it is said that none could read by sound except the chief of the corps of telegraphers. Visual signals were, however, used by them, such as columns of smoke by day and fire by night, and tree tops cut in peculiar forms. Often, too, the line of march of our troops or their presence was indicated by a white flag swung from huts during an advance. A code was no doubt employed on Panay, as on Cebu, where a copy was captured and sent to the Chief Signal Officer at Washington.

Lieutenant Wildman reached Santa Barbara January 2, 1900, and an office was there established. But one important river was crossed, that near Pavia, which has a width of about 150 feet between steep banks 10 feet high, but with a depth of water at this season of only about 3½ feet. This river was spanned. It is crossed only by a slight bamboo foot bridge.

From Santa Barbara a single No. 9 G. I. wire was run to Cabatuan, an important point in the foothills of the mountains, and telephone connection established January 8. This line, like the former, follows an excellent metaled highway, which after leaving Santa Barbara passes over a pleasant undulating country, well cultivated and lined almost continuously with bamboo huts; the road is fringed with trees and passes through frequent thickets of bamboo, and there was comparatively little difficulty in obtaining hard-wood, or duldul, trees for poles. Occasionally a living tree was used, but the precaution was taken by Lieutenant Wildman to run the line through a wire loop attached to insulators, and the strain of tree motion was thus relieved, giving a serviceable and strong line, which has since worked very successfully. About 2 miles from Cabatuan a river is crossed in one span of 320 feet, but the supporting poles are well sunk and heavy. This stream—the Tigon River—has low banks, some 300 feet apart, backed by slightly higher ground, and a depth of water at the ford of about 1½ feet at this season. There is no bridge on the main road. Some months later (in May) when garrisons were placed at Janiuay and Maasin, Cabatuan was changed into a telegraph office, and the telegraph continued to Janiuay. Maasin and Cabatuan were then connected by telephone. At various times during the construction the signal officer of the military district inspected the lines and was with Lieutenant Wildman's party upon its arrival at Cabatuan. After the construction of the Cabatuan branch work was resumed on the main line from Santa Barbara to Lucena. Upon leaving the former village a considerable native town of bamboo, the telegraph and highway—still a good metaled road—pass for some miles through heavy jungle interspersed with large trees. About a mile from the town a large river—the Tigon again—is reached, which is here about 180 feet wide, between heavily wooded banks some 8 feet in height and with a depth at this season of 3 feet at the ford. There is no bridge on the road. The river was spanned; and beyond the line continued past bamboo houses—many of which had been abandoned—for some miles through a wooded region, gradually growing more open and undulating, as the foothills of the mountains were approached. Rice fields became less frequent, but grazing land, somewhat bare of stock, was seen on either hand. Betel-nut poles were used mainly at first, but later replaced by duldul, or hard wood. At this time it became necessary to obtain strong guards from the nearest detachments for the construction party, for the region about Lucena, midway between Santa Barbara and Pototan, was much infested by ladrones or insurgents. Called by either name, these armed bands wandering over the country, were a pest to friends and enemies alike; they levied contributions upon the former, in the name of the cause, or perhaps walked off with a bullock, or a woman they happened to fancy, and waylaid and shot at the Americans from ambush when opportunity offered, dispersing afterwards to their homes, hiding their guns, and taking to the fields where they appeared soberly at work harmless as doves. Usually they wore no uniform; and dressed in the ordinary white of the country, came into town or walked about the highways unrecognized.[1]

On January 16 the line reached Pototan, the most important point of the region, containing several stone buildings and a large church. A stone bridge formerly crossed the river—the Suague—on the northern outskirt of the town, but it has now disappeared and nothing has taken its place. The banks of the river at the crossing, about 100 feet apart, are high, and though the depth of water was only about 2½ feet, it was evident that during the rainy season the stream is unfordable. From Pototan to Dingle the road—a metaled highway, as before—crosses a rolling upland, with here and there a thicket. The country was less thickly peopled, deserted houses were more frequent, and the inhabitants seemed less friendly than before. On January 22 the telegraph line reached Dingle. The town of Dingle is a wretched collection of bamboo huts clustering about a stone church that faces a great neglected plaza overgrown with grass. The town was (and is) a nest of insurgents, and much of the subsequent line cutting occurred in this neighborhood.

At Dingle the signal officer of the military district joined Lieutenant Wildman's party, having ridden from Iloilo along the new line, which was found to be well built and serviceable, and next day accompanied the party to Duenas and thence to Passi, where an office was established January 25.

From Dingle to Duenas the country traversed by the telegraph is similar to that south of the former place. The road continues the same, but is more shut in by brushwood and crosses higher hills than before. Hard-wood trees were fairly abundant. Near the entrance to Duenas a broad river—the Jalaur—is crossed, the wire resting on two heavy poles. The southern bank of this stream is high; the northern low, flat, and marshy in the rainy season. The river—about 100 feet wide—contained about 2½ feet of water at the ford. There is no bridge. The town of Duenas, on high ground a third of a mile from the river, is a bamboo village of the usual character, with a large plaza, on which stands a really fine stone church and a large building once a school and convent. The people are very poor, but seemed friendly.

From Duenas to Passi the road, which is followed by the telegraph, continues as before, passing over a rolling country, by turns open and brush covered. This region was then, and still is, infested by ladrones and insurgents, who were quiet for the moment on account of the presence of our troops, and gave comparatively little trouble, while the strong garrison of Passi was maintained; but when that place was abandoned, in May, the line cutting became incessant, and as there is no probability of troops being stationed between Pototan and Dumarao for the present, it is feared that telegraph communication can not be maintained between those places during the rainy season. Passi lies on the north bank of the Jalaur, which has here low sloping banks 150 feet apart. There is no bridge, but at the ford the water was only about 2 feet deep—a clear, rapid stream. The town is small, but pleasant, with the usual church, convent building, and plaza, but is wretchedly poor. The people, including priest and presidente, seemed friendly. At Passi the wagon road from the south ends, and the trail across the mountains to Dumarao begins. This trail is impassable for wagons at all times, and in the wet season nearly so for horses and bulls. It has an evil reputation for fever, and the signal officer was cautioned not to permit men to sleep more than two nights in the pass, but as this caution could not be regarded the detachment and every signal officer on the island remained in the pass during the continuance of the work with no apparent bad effects. When near Duenas a cipher dispatch was received from Lieutenant Wallace to the effect that the northern party would reach the Lamunang River, midway of the pass, about January 25, and upon arrival at Passi the signal officer of the military district started with a detachment of the Twenty-sixth Volunteer Infantry, under command of Lieutenant

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[1] The ambushing of trains and small bodies of men and raiding of towns have continued. The very day on which the above was written, June 30, 1900, three small affairs of the kind occurred: One in the vicinity of a working party of the Signal Corps, near Leon, where a uniformed band of insurgents attacked and captured 4 of a party of 5 of our people, releasing them afterwards, but retaining their guns; the ambush and wounding of a solitary soldier between Passi and Santa Barbara; an insignificant raid upon the town of La Paz, across the river, and hardly a mile from Iloilo, and a serious engagement on the coast near Dumangas.

Fales, to make a reconnoissance of the country in advance, leaving a strong guard and garrison for Lieutenant Wildman's party, who was to send his carts and spare material back to Iloilo and follow across the pass, hauling his supplies on bamboo sledges, which were found better than pack saddles, for use with the small native bull or carabao, our only transport animal. No trouble was experienced from insurgents, and on January 25 Lieutenant Wallace's camp was reached, about 5 miles south of Dumarao, and next day the signal officer returned with this party south to the Lamunang River, where a temporary camp was established, and near which the two detachments met.

The telegraph line running north from Passi follows a rough trail across foothills covered with trees and jungle; few betel-nut trees grow, but a better, if less sightly, hard wood was found for poles. Beyond the jungle-covered hills the line reaches a more open country, grass covered and rolling, and follows in general the eastern foothills of the Lamunang River, taking practically the route of the old Spanish line, some poles of which were still standing and had taken root.

The Spaniards endeavored to build their lines with duldul trees, which frequently take root if placed in the ground at the beginning of the rains, but the effort was hardly successful in this region, as few of the old poles remain standing. In fact here, as elsewhere in the Visayas, iron poles with cask sockets should be used. The deterioration of wood is so rapid that nothing else can be economically employed in permanent work.

The country bordering the trail is uncultivated and very sparsely settled, and the people so poor that it was difficult to buy even a chicken or a cocoanut. A few yams could be obtained, but there was no fruit. The filth and squalor of the inhabitants of this region were remarkable; many of the huts were abandoned, but the prevalence of smallpox was evident, and people with festering pestules were met on the way walking unconcernedly under the burning sun. About 6 miles from Passi the trail reaches the Lamunang River near a little village or barrio of the poorest description, where not even a cocoanut or banana could be bought, yet whose poverty had not prevented its being raided by the ladrones or insurgents a few days before, and 2 women, besides all available loose property, carried off.

The river at the trail crossing is a clear, pretty stream, confined between high wooded banks about 60 feet apart. It is evidently impassable in wet weather, and even at this season, the water 2 feet deep at the ford, was 7 or 8 feet deep in places. There is, of course, no bridge. The telegraph crosses on two large hard-wood poles. North of the river the telegraph, still following the trail, continues first through jungle where much cutting is necessary, and across wooded barrancas to open grassy hills, a fine grazing country abounding in wild fowl, deer, and monkeys, which continues into the province of Capiz. As Dumarao is approached the hills fall off into an undulating region well cultivated with rice fields, with cocoanut and bunga groves surrounding the huts that appear at intervals along the roadside. On the outskirts of Dumarao a wagon road is reached, and this continues in general a good metaled highway through Cuartero, Dao, and Panitan to Capiz.

On January 29 the north and south ends of the trunk line were joined about a mile north of the Lamunang River and Iloilo was connected with Capiz.

With new men, through a difficult and hostile country, with insufficient transportation and that of the slowest kind, cutting their own poles, and working in intense heat, the two small detachments under Lieutenants Wildman and Wallace had in a few days more than a month completed a line which the Spaniards were seven months building. Great credit for this work is due to the officers named and the men under them.

Upon the completion of the trunk line both detachments moved north to Dumarao accompanied by the signal officer of the district, and preparations were made for building a line from that place to Sara, Concepcion province, the headquarters of the Eighteenth Infantry.

At Dumarao the telegraph office was established in a large stone and wood building next the ruins of a fine church. This building, once presumably a convent, was and is used as a barracks for our troops. Dumarao is a small town, built almost entirely of bamboo, but with a few houses of a better kind. It consists of the usual grass-grown plaza, at one side of which are booths where the natives on market days display their wares. The village lies in a pleasant country near the head waters of the Bararan River, which lower down enters the Panay, a large stream navigable at most times by cargo canoes from Capiz as far south as Dao.

After one day for rest and the washing of clothes work was begun on the line from Dumarao to Sara, and on the same day, February 1, the signal officer of the military district, accompanied by Lieutenants Wildman and Wallace and a detachment under Second Lieutenant Pasco, started upon a reconnoissance to Astorga across a country into which our troops had not penetrated.

After leaving Dumarao it soon became evident that the difficulties in line building would be serious and that the country was the worst encountered on Panay. The trail leading across wooded hills continued for some miles up the valley of the Barbaran, steadily growing worse as it advanced until a horse could hardly follow it; then leaving the river crossed a succession of hills covered by a jungle grass, reaching far above a horseman's head, so dense as to be impenetrable, and a perfect heat trap, without shade. Between the hills flowed rivulets through deep barrancas overgrown with prickly bamboo, through which the trail rose and fell like the teeth of a saw, and became so narrow at times and so deeply cut into the earth that a horse could not put one foot before the other. Rain fell intermittently and made the clayey soil slippery as grease. Across this region the transportation of heavy poles and No. 9 wire—all we had—seemed well-nigh impossible. The country was desolate in the extreme; there were no fields, no houses, no inhabitants. The people had been driven away by fear of the robber bands of the neighboring mountains, it was said, and the one large bamboo village on the way, called Lavaan, where we passed the night, was a scene of dreary desolation; not one inhabitant remained, the houses stood empty, and a herd of horses wandering about the plaza, overgrown with grass and bushes, was the only sign of life. Beyond, the trail continued through jungle grass and barrancas, fording many streams, to Astorga, where the map showed a considerable village, but where was found a charred and blackened doorpost, the only sign of habitation left.

As a reconnoissance had been ordered from Sara to this point the Dumarao reconnoissance was not carried beyond.

Shortly after the return to the latter place the detachments under Lieutenant Wildman moved out to Lavaan to establish their camp and commence the difficult work. Neither sledges nor bull packs could be used on parts of this trail, and much of the transportation was done by carriers. At times more than 50 natives were employed, but labor was not easily procured, for the region is dreaded by the natives on account of disease as much as because of the ladrones. However, the line was built. On February 22 it had reached Tina, and the more difficult part was finished. Here Lieutenant Wildman, having been ordered to return to Iloilo by the signal officer to begin the construction of a western line to Antique province, relinquished the command to Lieutenant Wallace, who carried the line into Sara March 2, and continued it by telephone to the coast at Ajui March 9. It has since worked admirably, but much of the subsequent illness in the Signal Corps detachment is to be attributed to the Astorga trail.

Returning to Dumarao after this reconnoissance the signal officer of the military district, accompanied by Lieutenant Wallace and a detachment of the Eighteenth Infantry, left Dumarao February 5 to inspect the line to Capiz, which follows a good road across a level country, well cultivated with rice. Betel-nut poles, afterwards replaced, had been largely used except in the vicinity of Cuartero, a large town on the Panay River, where for a considerable distance living trees carry the wire. The line is of the same character as before.

At Cuartero escorts and wagons were to be exchanged with a detachment from Dao, but as the Dumarao train approached the town a report was received of heavy firing across the river. Pushing on it was found that the Dao detachment had been attacked and driven back, 2 men and a native driver wounded, but the insurgents retreated on the approach of the second detachment, leaving the wagons and their contents uninjured on the road. The attack had been made from a hill about 60 yards from the road, where a hut showing traces of long occupation stood, surrounded by trees and bushes. In front was a deep trench, and in rear the reverse slope of the hill, dropping into thick woods, gave an excellent opportunity for escape from a strong force, while through an opening in the brush in front perfect command of the road and telegraph line existed. A cut in the wire here and the repairman's fate would never be known. The nest was burned out but probably many such exist, for at this time ambuscades were frequent, especially on the Panay River, where transport canoes had been several times attacked. This method of warfare has not ceased, but a more vicious position than the one near Cuartero is not often found.

The Panay River at this point is crossed by a span of about 300 feet, the longest on the line. The poles are sunk 7½ feet in the ground and 25 men were required to put them in place. This span has given no trouble. The river banks are about 15 feet high, abrupt on the south, but on the north extending in low, sandy ground to wooded hills, beneath which the road passes. There was about 3½ feet of water at the ford and no bridge except a slight bamboo crossing and hand rail.

Beyond Cuartero the line continues along the highway, the original bunga poles having been replaced by hard wood to Dao. Dao is the largest town of the region, and is generally considered the head of the navigable river. It contains a few stone buildings and church, but for the most part is of bamboo. At Dao the line again crosses the Panay, which is here deep and crossed by a ferry, two canoes joined by a bamboo platform, and capable of carrying horses and wagons. The banks of the river are some 18 feet high and 200 feet apart. Beyond, the line and highway follow the river valley across a flat country bordered by hills well cultivated with rice fields, and with many habitations by the wayside. The road is good in the dry season, but is less well metaled than before, and probably impassable for wagons during the rains. The telegraph was a single No. 9 wire, then supported on bunga poles for the most part, but afterwards changed; pony insulators were used in part. This line has done excellent service, and is creditable to Lieutenant Wallace, from the speed with which it was constructed in a region where poles were difficult to obtain and at a time when the country was very actively hostile. The line from Dumarao to Capiz has stood for nearly six months practically without interruption from breaks, and with only trifling interruptions from the insurgents, though passing through a restless and disturbed region. The only explanation that can be offered of the fact is a report that reached the signal officer of the military district to the effect that the general commanding the insurgents in Capiz province, one Diocno, had ordered that no injury be done the telegraph; possibly with the hope that it might later be useful to the insurgents themselves. Whatever the cause, the lines in Capiz province have been little interrupted.

Passing on through Panitan, a somewhat larger but unimportant town where there is neither garrison nor telegraph office, the line continues to Loctugan, a town similar in character to Panitan. Thence running north through a fertile, well-peopled region, growing more thickly wooded toward the coast, reached Capiz.

Capiz is a well-built, clean, and pleasant town, with many excellent houses and fine church and government building, which is used as headquarters. The people seem prosperous and orderly.

Having finished the inspection of the trunk line from Iloilo to Capiz, the signa officer of the military district returned to the former place on the gunboat *Pampanga*, arriving there February 9.

The necessity of a western line from Iloilo to San Jose, province of Antique, now became urgent. Troops had been sent to occupy the town, but on account of the hostile attitude of the people and difficult roads, communication with it was practicable only by sea. On February 23 a detachment was put in the field to build line from Iloilo to Tigbauan and San Joaquin; thence either by the Tiolas Pass or by the coast road to San Jose. The region traversed as far as San Joaquin is flat, covered by brushwood and large timber. It is well peopled and contains several large towns. The road, once probably a good metaled highway, is out of repair, very bad in places, and almost without bridges. Good hard-wood or duldul poles were obtained and a strong serviceable line constructed with double wire from Iloilo to Molo, thence single No. 9 W. U. S. insulators and oak brackets. On March 26 this line had reached Miagao. It was inspected in part by the signal officer of the military district and by Lieutenant Wildman, in the absence of the former officer on duty in Bohol and Cebu (March 14 to April 13).

On March 27 Lieutenant Wallace was sent by Lieutenant Wildman to San Jose, Antique province, to construct a permanent line from that place to San Joaquin. This proved difficult work (see Lieutenant Wallace's report, Appendix G), but was completed through. On account of the absence of troops the line was destroyed in rear of the building party and never used. It was manifestly impossible to maintain a telegraph line through a hostile country unoccupied by troops if the enemy desired to interrupt communication, and the commanding general ordered that the repair of the line be delayed. The Signal Corps having reconstructed the line could do no more until the peninsula of Antique—a nest of insurgents and ladrones—was occupied by garrisons. This has not yet been done; when it is, the destroyed section—about 30 miles—will be rebuilt. Lieutenant Wallace, having reported the Tiolas Pass impracticable, was directed to follow the coast road or attempt a lower pass, and on March 29 commenced construction from San Jose south. The conditions surrounding this work were more difficult than those before encountered.

With the occupation of the eastern islands of the Visayas, Bohol, Leyte, and Samar, it became necessary to extend the connections, and the signal officer of the miltary district accompanied Maj. H. C. Hale's expedition, which sailed March 14 to take possession of the first of these islands. We met with no resistance; indeed, found the people incapable of making a fight, as they were practically without firearms. So after a paper protest Major Hale received the surrender of the government, which, by the way, proved well organized and creditable to the people.

Bohol is a most interesting island. The towns, especially of the southern coast, are pretty and clean, with good stone houses buried in green and facing white streets cut from the coral rock, or little bamboo dwellings. The people are industrious and well fed, and have little of the sullenness of expression so common in Luzon and Panay. The troops were landed as if under fire, and marched to the capital, about 2 miles away, and the signal party, with our excellent Type E kit and 7-strand naked wire, connected headquarters with shore station, and thence with the shipping by flag, in fifty minutes from the time of landing. This wire works well, but the banana tree must be avoided as it is so full of water that it almost gives a ground.

After connecting the only outlying outpost then established in Bohol with the capital, the signal officer traveled along the western coast of the island with Major Hale, and from a town called Loon discovered that it was practicable to connect Bohol with Cebu by heliograph, and so requested that a small detachment and the one signalman that could be left on Bohol be sent there to open station upon the arrival of a party on the other coast. From Loon the journey was continued to Tubigon, where with 2 sergeants and native, the signal officer embarked in a banca for Cebu, and on the day afterwards started with Lieutenant Davies down the coast of that island in a merchant steamer that, by the courtesy of her owners, was to drop the party off Argao, the second heliograph station. There was a small detachment of our troops here and Lieutenant Davies had recently carried the telegraph into the town, where all the day before the people had watched the twinkle of the heliograph on the Bohol coast. The station was opened at Argao next night with a carbide lantern, which acted fairly, though the night was light, with a young moon directly behind the station, and the distance 16 to 18 miles. On April 7 a heliograph station was opened and the result proved most excellent.

After the completion of the Bohol connection, which has since served its purpose well, though of course it is much less satisfactory than a cable, the signal officer of the military district returned to Cebu and thence to Iloilo, arriving at the latter place April 13, since which time the telegraph system, Island of Bohol, has largely increased.

On the 1st of December, 1899, the telegraph system of the island of Negros consisted of 28 miles of old Spanish telegraph line in a bad and unsatisfactory condition, on which were three offices, namely, Silay, Bacolod, and Bago, together with 17 miles constructed by the California Volunteers. The latter was a makeshift line, strung on bamboo poles, trees, or anything that would hold the wire from the ground. The wire itself was old telephone material, taken down in Iloilo after the fire, alternating with wire from hay bales, office wire, and anything else that could be picked up and utilized. The two offices on this line were San Enrique and La Carlota. In addition 24 miles of poles had been set ready for the wire north of Silay. On the 8th of December work upon these 24 miles of wire was commenced and completed by the 1st of January, 1900. Two offices on this line were opened, namely, Saravia and Manapla. On the 13th of January Lieutenant Clifton was sent to Bacolod as signal officer of the island of Negros and found that work upon the lines had almost stopped, as the corporal in charge of the work was ill and because no orders had been received for poles necessary for the Jimamaylan extension. After consulting with the adjutant of the Sixth Infantry, Lieutenant Clifton put all his men at work to extend the line from Manapla to Cadiz Nuevo, as troops had at that time returned from the mountains and the necessary escort could be secured at Silay. It was thought inadvisable at that time to push the north line through to Escalante, as the country was very bad and it was reported to Lieutenant Clifton that it would take two months to clear a way for the line. The office at San Enrique, which had been closed on account of the small number of operators on the island, was reopened for business about this date. For various reasons, the building of the line to Cadiz Nuevo was abandoned and all the squads transferred to the southern branch, one squad starting to build from Jimamaylan, through Binalbagan to Isabela, and another squad starting from La Carlota and building down. The line between Jimamaylan and Binalbagan was completed on the 8th of March, and both offices opened for business. The distance between these two places is 8 miles, but work was delayed on account of having to cable two wide navigable rivers. Great delay was caused between Binalbagan and Isabela by the inability to get poles, and it was not until the 17th of March that the office at Isabela was opened. The squad coming from the north was also seriously hampered by the difficulty of getting poles between La Castellana and Isabela, which must be hauled from 15 to 20 miles by carabaos. It was intended on this line to use poles which had been ordered by the presidente of La Carlota from the island of Guimaras. They did not arrive, however, and 40 men with carabaos and carts started for the mountains when the line reached La Carlota. This line is an extremely strong one, and has been in good working order since it was finished. The presidentes of Silay, Talisay, Bago, Sumog, and Bacolod were at this time notified to furnish poles for the rebuilding of the old Spanish line, which had almost ceased to work.

On the 18th of April the two squads met between La Carlota and Isabela and the southern line was completed. On the evening of the 26th of March the town of Silay was almost entirely burned and the line through that place destroyed.

The offices in operation at this date were Manapla, Saravia, Silay, Bacolod, Bago, San Enrique, La Carlota, Binalbagan, and Jimamaylan. Immediately after finishing this southern section the work of reconstructing the old lines was commenced. Almost all the old poles were replaced from Bago to Silay, and a large amount of cutting out was done through thick underbrush and heavy timber. This section has now been completely rebuilt and is in good working order. After finishing these repairs the squads returned to the Cadiz Nuevo and Escalante sections and completed them through to Cadiz Nuevo on June 6. Escalante was reached about July 10 and this section of the line completed.

The conditions on the island of Negros have been entirely different from the conditions on Panay as it has been the policy of the commanding general to use presidentes of towns, prisoners, and men detailed from the line to aid the signal parties in construction and maintenance of its lines. Presidente have been ordered to furnish and distribute poles ahead of the Signal Corps wire party, and in most cases this has been done. In one case, where the presidente had been extremely slow in getting out the posts, carts, carabaos, and men were sent from Barcolod and the necessary expense charged up against the town itself. Native prisoners have also been extensively employed in digging the large number of post holes required.

## CONCLUSION.

In conclusion I desire to say that great credit is due to the officers of the Signal Corps under my command for the faithful and arduous service they have rendered, both in the field and in the management of their various districts. First Lieut. L. D. Wildman, Volunteer Signal Corps, commanding Company H, in addition to his marked ability as a mechanical engineer, which has caused him to be consulted on various occasions upon affairs outside his own work, has shown energy, executive ability, and interest in corps work that are unusual and deserving of high commendation.

First Lieut. Charles S. Wallace has been almost constantly in the field since last December and in the enemy's country. His services have been of unusual value. Cool in danger, energetic, eager for work, and with thorough professional knowledge, I regard him as an officer of the greatest value to the corps.

First Lieut. William E. Davies has done well in Cebu, and has shown great activity, not only in ordinary work, but against the enemy in the field, and I desire to commend him to you for it. He is a faithful, energetic, and hard-working officer, very capable in his position, as I have already had occasion to report.

First Lieut. Alfred T. Clifton has done well in Negros. Considering the small force that could be spared him, the condition and extent of his lines—second in mileage to Panay—are commendable. In the field he has shown great activity and energy.

The promotions recently announced of Second Lieutenants Davies, Wallace, and Clifton have been earned by hard work.

## EXTRACT FROM REPORT OF LIEUT. L. D. WILDMAN, COMMANDING COMPANY H, SIGNAL CORPS.

In the six and a half months ending July 10, 1900, the lines on the island of Panay have been extended to include 83½ per cent of the garrisoned towns. The system comprises 306 miles of telegraph and telephone line, with 16 telegraph stations, 8 branch telephone stations (which form in reality a part of the telegraph system) and a city system of 28 telephones at Iloilo.

The operation and maintenance of these lines through hostile country with a force of men entirely inadequate to the needs of the service is at best a difficult matter, and the fact that communications have have been so well kept up during the six months, speaks well for the efficiency, willingness, and personal bravery of the enlisted men employed. For the maintenance of the lines the system has been divided into eight sections, each section employing 1 native lineman. This lineman works under the immediate direction of the operators in his district, who are in turn controlled by the chief operator of the island. One district, that from San Jose de Buena Vista to San Joaquin, has practically been abandoned, as some 45 miles of territory is unoccupied by troops, and therefore impossible as a route for the telegraph line. The second section, from San Joaquin to Oton, contains 6 stations—San Joaquin, Miagao, Tigbauan, Guimbal, Igbaras, and Leon. The native lineman has his home station at Tigbauan. The operator at San Joaquin, in case of trouble on the line between his station and Miagao, is expected to repair it himself, as he can leave his station without interfering with the work of the line. In case of trouble between Miagao and Oton the native lineman is instructed to proceed immediately to the point of trouble and to make temporary repairs as quickly as possible. These repairs are usually made with light copper wire, of which he can carry quite a large amount without burdening himself. If the interruption is of sufficient extent to necessitate a large amount of material, he is furnished with a squad from the nearest point and given the material with which to make permanent repairs. A reasonable supply of all materials is kept at each telegraph station. This same method of repair is carried out on each of the seven sections, with the exception of the one between Pototan and Dumarao. This section has been particularly troublesome, owing to the activity of the insurgents, and a signal corps corporal been stationed at Dumarao to oversee these repairs. With this one exception the operators and the native linemen have done all the repair work which did not require good-sized squads and large amounts of materials. The stations of the native linemen are as follows: Tigbauan, Iloilo, two at Pototan, Dumarao, Sara, and Capiz.

The 16 telegraph stations are open continuously night and day, the main office, Iloilo, being the only one with 2 operators. In each of the other stations the operator sleeps in the same room with his instrument and is never away from it without permission from the chief operator, except at meal times. The faithfulness of these operators is shown by the fact that but two complaints have been made during the entire six months.

The 8 telephone stations are in reality a continuation of the telegraph system, but telephones were substituted for the instruments in order to save operators. All calls, day or night, are answered by some member of the guard, who is always within hearing of the bell. The telephones are cared for, however, and the lines maintained entirely by the Signal Corps. They are nearly all of them short and have proven very satisfactory. In February the lines of the island were thrown open to paid commercial messages. This has necessitated a large amount of extra bookkeeping by the operators and at headquarters, but has resulted in a considerable amount of money, and has been a great convenience to the merchants along the line.

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Interruptions range from apparently wanton cutting of the poles with a bolo to organized resistance to the passage of the line. In the case of the western line between San Jose and San Joaquin this resistance was manifest from the time the line was started until it was finished. A guard of 100 men accompanied the Signal Corps squad and was fired upon nearly every day. The nature of the country made it possible for the natives to conceal themselves on the high hills overlooking the road and to take occasional shots with almost no danger of molestation from the troops. On this expedition an effort was made to run the line through the Tiolas Pass, which would have saved some 30 miles. After reconnoitering, however, it was seen to be clearly impossible to maintain it, and the line was carried around the end of the peninsula along the shore road. Numerous cuts were made behind the troops, and that section of the line was never in complete working order. After reaching San Joaquin the construction squad was ordered in, and almost immediately the entire line which they had built was torn down and carted off. The operator, who had been left at San Jose, on trying to investigate the cause of the interruption, was ambushed with his guard some distance below Antique and all his material, his line tools, and his instruments were captured. After this the attempt to maintain that section of the line was abandoned until the country could be garrisoned. This has proved to be the worst spot on the island for telegraph lines.

At the time the main line to Capiz was commenced there was no garrison at Passi, but as the line advanced it was seen that without a garrison at that point the portion through the pass could be torn down at will with almost no danger to the insurgents. The Chief Signal Officer therefore asked that a garrison be stationed at Passi, which was immediately done. While this garrison was there the disturbances were few, but as soon as it was removed, on May 23, there was a determined effort by the insurgents to interrupt the communications between the north and south ends of the islands.

On May 25 the first cut was made about 4 miles north of Passi. Two poles were chopped down and about 150 yards of wire carried away. The Passi lineman and a guard went out immediately, and the line was open but three hours.

On May 26 the line was again cut a short distance below Passi and was again put in working order almost immediately.

On the 28th the line was cut again near the crest of the pass. This time 1 mile of poles and wire was cut down and taken away. A squad was immediately sent out from Dumarao and the mile break was put in within thirty hours, in spite of the fact that the squad which repaired it was ambushed by about 50 insurgents. Two of the detachment were seriously wounded, and 5 of the guard kept the insurgents in check from 9.30 a. m. to 2 p. m., when reenforcements from Dumarao were sent to their rescue. The native lineman and all his tools were captured and have never been heard from since. The loss of these tools necessitated a night ride to Capiz and return, a distance of 82 miles. When these tools reached Dumarao a detachment of 25 men went to the point of the trouble and the 2 wounded men were found in a shack, where they had been abandoned by the insurgents. One of the wounded men had made application (which had been favorably indorsed and forwarded) for transfer to the Signal Corps. He is now in hospital with 9 bullet wounds.

On June 1, at almost the same place, 4 miles more of wire were cut out and destroyed. Owing to the fact that the small amount of material placed at Dumarao for emergencies of this kind had been exhausted the supply had to be sent from Capiz, which had been stocked as a depot for the northern half of the island. A detachment was sent from Dumarao to regarrison Passi and an operator was dispatched from Iloilo on horseback with relays of guards to take charge of the office. On his arrival at Passi he moved his office to the end of the break and relayed the north and south messages until the line could be repaired. Actual communication was not disturbed for more than two days, although it was five days before the repairs were completed.

On June 16 the same performance was repeated and 3 miles of wire were cut out. At this time the line was open for three days, but was repaired by the Dumarao squad.

On June 23, the detachment having been again removed from Passi, 4 miles more were taken away. As all the troops at Dumarao and Pototan are occupied in chasing the insurgents in another part of the island, the break has not yet been fixed. Runners are, however, employed from Signal Corps funds, and the north and south messages are exchanged as often as possible by this means.

It can readily be seen that this section of line, 33 miles long, through some of the worst country in the island, will be impossible to maintain if a strong patrol is not established, or if the garrison at Passi is permanently withdrawn. With the small supply of material on hand in this district it is out of the question to keep 20 or 25 miles of line material on hand at each telegraph station to provide against these interruptions.

When the station at Passi was abandoned an attempt was made to leave the line material, which had been sent to that point, with some responsible person. The presidente of the town and the padre both refused to have anything to do with it, saying, "As soon as the garrison leaves the insurgents will come in and take it away." This material, therefore, had to be taken to Pototan. The second time the post was abandoned the presidente was forced to take charge of a small amount of wire and brackets, as there was no transportation to carry it across the pass to Dumarao (in which direction the garrison retired). The night after the garrison left ladrones visited the presidente and took away these stores.

A short time before this they captured a cart with 9 coils of wire, 3 digging bars, 3 shovels, a pocket relay, insulators, brackets, pliers, and comealongs. This cart was, on its way from Pototan to Passi, in charge of the native linemen only, as no guard could be obtained at Pototan. It was halted by insurrectos about 5 miles from Passi, but the lineman escaped after being shot at a number of times and chased for 2 miles. The driver of the cart was related to some of the ladrones, and upon his representation that he would be killed by the Americans if the material did not reach Passi, he was allowed to deliver it at that point.

Between Dao and Capiz, where the trail over the mountain to the sea crosses the main road, there have also been numerous cuts. It is understood that the insurrectos living in the mountains are under orders to cut the line at this point, practically as a defiance, every time they cross. The cutting commenced before the line-construction squad had reached Dumarao, and has continued with some frequency ever since that time. It was near this point that a wagon train bringing supplies from Capiz to Dumarao was ambushed. After the ambush a small fort hollowed out of the crest of the nearby hill was discovered. This fort had existed for a long time and its presence was entirely unsuspected by the American soldiers who had passed by that point times innumerable.

There has also been much trouble on the line between Benate and Pototan. This line passes through the town of Barotac Nuevo, which is only a short distance from Dumangas. The country around that point has for the last month been the center of insurrecto disturbances, and the line has been cut many times. This is the only line on the island at present which is not permanent. It was constructed of insulated wire at a time when there were no brackets or insulators in the department. A squad was sent out a short time ago to replace it with No. 9 G. I. wire on poles, but after staying seven days at Barotac Nuevo, was forced to return to Iloilo, as there were no prospects of a guard being furnished to finish the reconstruction.

The total number of serious interferences with the wire since February 2 has been about 35, 23 of them having occurred in May and June.

## EXTRACT FROM REPORT OF LIEUT. CHARLES S. WALLACE, SIGNAL CORPS, UNITED STATES VOLUNTEERS.

Antique province is a long, narrow strip occupying the entire west side of the island, the mountains following the coast line quite closely. The people are mostly in sympathy with the insurgents and unwilling to work. It was found necessary to impress all labor employed outside of San Jose. The roads are wretched, bridges rotten or entirely gone, and transportation crude and scarce. However, work was promptly started with 5 signal corps men, later increased to 7, a guard of 85 men, commanded by Capt. H. L. Roberts, of the Nineteenth Infantry, and the usual following of carts and native laborers.

Owing to the scarcity of timber along the coast and the consequent difficulty of replacing rotten poles, I determined to use the algodonero tree for poles. This tree sprouts on replanting and becomes a growing tree, which if kept trimmed out would be far superior to the punky quickly decaying timber sometimes used for poles. To insure their growth the holes were made very deep, and in order to secure sufficient timber of this particular kind poles were often unusually large, some of them having a diameter of 2 feet at the butt.

On the morning of the 10th of March, about 2 miles north of Dao, the party was fired upon by insurgents concealed in the hills, which are close to the road. The place was admirably selected for attack, the party being in an open rice field, entirely devoid of cover, except the narrow rice dykes. The firing was quite spirited for half an hour, but no casualties resulted. It is interesting to note that 3 of the 5 signal corps men were found on the skirmish line, 2 armed only with revolvers; the other had borrowed a rifle from a member of the guard. Two days later the party was again fired on, but no harm was done other than delaying the work.

The people through this province showed a disinclination to work that was pathetic. On entering a pueblo where it was desired to change workmen, I would immediately notify the presidente of the number of laborers I would require the following morning, and he would invariably assure me that they would be there at the hour named, but in no instance did the men appear. In every case I found it necessary to send the guard through the town taking every able-bodied man found until the number required was secured. In one lot thus impressed were the secretary of the presidente, 2 members of the police force, and the head of a neighboring barrio. These men were redeemed by laborers before work began. The occupation of these people is raising rice and fishing. As this is not the planting season, and fishing is done by traps, visited once or twice daily, the men pass their time in almost complete idleness.

The road is passable for carts as far south as Punta Sandal, between Casay and San Francisco. At this point the cliffs extend to the water's edge. Here the carts were sent back to San Jose and bamboo sledges substituted. Supplies and sledges were passed down into the surf and up onto the road on the other side by hand, the carabaos swimming around.

The line was completed to a point 7 miles west of San Joaquin and connection made with Iloilo on April 26. Forty-five miles of line was put up in twenty-nine days, including Sundays and days devoted to moving camp and fighting.

On April 24 a communication was received from the presidente of Dao to the effect that the insurgents had destroyed the line behind us, from a point 4 miles south of San Jose to Dao, about 14 miles, and were working industriously along south with the evident intention of destroying the entire line. The commanding officer of the guard considered it unsafe to detach men from his command to return to Dao; therefore nothing could be done. This information was immediately sent to the Chief Signal Officer by me and to the Adjutant-General by Captian Roberts.

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I can not make any estimate of time necessary to complete the line, as no American has ever been south of Anini as far as I can learn. We are unable to camp at the proper places for fear of attack, and hours are spent on the road waiting to flank the hills before the line can go on. When a full day's work is put in on the telegraph line 2½ miles is gotten up. No man can be gotten up. No man can be detached from the guard to conduct supplies ahead or to guard them except in camp. The country is absolutely devoid of anything green, and the carabaos give out for want of food. The captain and I both lost horses and equipage in the first fight. I am carrying 30 native laborers and 9 teams, putting up a good line. Do not know of Dao being garrisoned. A native lineman could not be induced to work here without a guard. Unless conditions change repairs must be made by armed parties. I will not be able to repair the line if it is cut in my rear. I expect it to be cut as soon as I leave Dao. We are now hauling poles 3 miles, and do not know how long the poleless country will last.

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From reports received from the presidente, Dao, and other native sources, the line was destroyed on the 24th instant from Milandog to Dao. This is a distance of about 14 miles north of Dao. From the same source I learn that insurgents are collecting in large numbers at Dao. I would like to return to Dao and see this thing through.

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Colonel Murray arrived on the *Francisco*, he having come over from Tacloban to send some messages. We went over the situation pretty thoroughly. He authorized the employ of the necessary labor and transportation, but did not want me to take trees for poles from the towns or yards of the people. This makes the first few miles of construction a little slow, but I am getting along fairly well. He wishes the line to Jaro built first, then a branch to Caragara and Barago, then Jaro to Tacloban. The distance from Ormoc to Jaro is about 25 miles, 10 of which is over a very bad mountain trail impassable for pack animals. I have decided to use the 10 miles of insulated wire, which I found here, for this part of the trail, it being lighter and easier carried.

The colonel has gone to one of the southern ports to bring up a guard. When he returns I will move out on the work with an officer and 40 men. * * *

At the colonel's suggestion all the surplus property has been packed for shipment to Caragara, and the *Francisco* will take it on her return trip. From Caragara what is necessary can be sent into Jaro, and I can send the balance around to the east coast when the Caragara line is completed. I think I will make the Caragara branch a telephone line, using Type E kits until the telephones arrive. The colonel tells me that there is no town or troops at the other end of the Samar cable, and that he desires the lines on the east coast of Leyte built before the lines south from here. I am informed that except between here and Jaro there are good roads, passable for carts but very muddy.

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## EXTRACT FROM REPORT OF LIEUT. W. E. DAVIES, SIGNAL CORPS, UNITED STATES VOLUNTEERS.

On December 1, 1899, the length of the telegraph lines, island of Cebu, was about 25 miles; offices were open at Cebu, El Pardo, Naga, and Carcar. There were also in operation about 3½ miles of telephone and 12 stations on 1 wire, but no exchange. No old Spanish lines were in use; in regard to which it was stated that the Spanish line had been seldom in service, the wire broken often, and it usually required several days to repair. On the arrival of the signal officer, October 4, 1899, the line was in bad condition, only about half enough insulators having been used. However, it was worked continuously with but one interruption from October 9. By December 18 it had been put in tolerable repair. The telephone line on houses and bamboo poles was also semipermanent. Work was commenced on repair of the telegraph, and by December 18 it was in fair condition. On January 4, 1900, the signal officer took the field with a detachment, and was absent during a large part of the month.[1] On February 13 the line from Cebu (city) to Mandaue was commenced and finished in three days, with 2 signal corps men, and by February 25 the line was carried to Consolacion.

These lines were built on trees when possible, and when no trees were available bamboo poles were generally used, though a few cotton-tree poles were cut when suitable. Our line to the north will follow the old Spanish road, which is built almost entirely of stone, and macadamized. The road in many places is too narrow to build a pole line and clear the dense growth which lines it, and I have adopted the plan of placing my brackets in the high trees to clear these obstacles, stretching my wire by the aid of the bull and cart. I avoid using bamboo whenever possible, and use a few men for trimming trees and dense brush in preference to wasting time and energy cutting green bamboo.

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[1] During his absence he took part in action on Languyon River, destruction of Mount Amai trench and property January 28. Destruction of trench and property with lot of ammunition 5 miles from Mount Amai, and taking and destruction of fort and property at Montacop. No signal work. Commanded advance guard.

February 26, closed office at Camp Rowan at noon; returned to Cebu evening of February 27. Some of the bamboo which had not yet lost its natural color was bent considerably, while others were almost broken off by the strain on them.

On March 5, commenced construction of telegraph line from Consolacion to Danao.

March 7, opened Liloan.

March 10 opened Compostela sending station.

March 13 opened Danao. Distance from Consolacion to Danao, 14½ miles. Returned to Cebu with party. Underbrush was very dense, but was cleaned up by cutting and hanging the wire high in the trees and frequently crossing the road. A few hardwood poles were found along the road and hauled to the places where road crosses through swampy land and where it would have been impossible to cross without poles. Less than twenty poles were used on line, five of which were bamboo. Brackets were tied to trees with one tie usually, but in case of a long stretch or unusually hard strain two ties were made. Particular attention was given to cleaning up its path.

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I was compelled to secure nearly all new laborers for this trip, as the majority of the laborers previously employed failed to report at the hour designated, and after searching their neighborhood I found three of them and compelled them to go with me. I took this action because they were all men who had some experience and good workers. They were practically on a strike, as they had promised twice within forty-eight hours to report for duty. The majority of men left town to avoid us, and I placed the first two I found in the guardhouse until I secured enough men. They claim the work is harder than they are compelled to do in the town for the same pay.

I hauled all the supplies I could on the wagon and sent the balance to Danao by boat. When my wagon load of supplies was exhausted I went to Danao, secured more, and built back to where I discontinued for want of supplies. Distance, 14 miles.

I have all telegraph offices on one circuit from Carcar to Danao.

March 17 began repairing telegraph line Cebu to Carcar.

March 21 completed repairs to Carcar. Distance covered, 25 miles.

When the line Cebu-Carcar was built originally, it was put up hastily without insulators a greater part of the distance. When I arrived here in October it was reported to me as having been impossible to work beyond El Pardo for several days at a time. I have sent small repair parties over it, and kept a man on it regularly until lately. The line works continuously, but will not work satisfactorily when extended 20 miles beyond.

I will commence this work as soon as the commanding officer can arrange to send my supplies to Carcar by boat, so that when line is completed I can commence the work of construction Carcar to Argao.

March 22 with same party commenced construction line Carcar to Argao.

March 24 opened Sibonga. Distance built, 18½ miles.

April 27 left Cebu with Sergeant Hart and Corporal Russell, of Signal Corps, and five natives. Property on one wagon furnished me by quartermaster and some wagons in ration train going to Carcar. To avoid using bull carts the quartermaster decided to use banca for wire. Arrived at Sibonga April 28.

April 30 commenced work. On account of bad roads I ordered 7½ miles iron to Sibonga and 10 miles to Dumanjuc, only taking 2½ iron and 2½ insulated with me. When I completed 2½ miles, wire had not left Cebu for Sibonga, and I decided to go to Dumanjoc, setting poles, putting on insulators and brackets, and put up the wire returning to Sibonga. The quartermaster's failure proved to be a lucky one. We had all the carts we could handle on that road on account of the grade, bad places, intense heat, and lack of water.

The country which the line traverses is hilly and the soil not very deep, so that we were compelled to dig post holes through from 12 to 30 inches of rock.

The country is all under cultivation and few places where poles could be secured. Your instructions not to buy poles, and Colonel Snyder's to not cut them from other people's property, would have made it impossible for me to build the line had I not adopted the Spanish policy of asking for what you want, and ordering the tenientes to get their people out cutting trees to present to us. All the tenientes did very well, and, as a result, the following figures will show the foundation of the line: Poles with insulators, 206; without insulators, 71; trees with insulators, 139; without insulators, 8.

I insulated brackets with tape where iron wire was used without insulators, and used 2½ miles of insulated wire to make the line work well till I could return to Dumanjuc.

I completed line May 17 and returned to Sibonga. Remained there until May 22 and returned to Cebu morning May 23 with Sergeant Hart and two natives in a banca.

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## APPENDIX No. 8.

### EXTRACTS FROM THE REPORT OF CAPT. EDGAR RUSSEL, SIGNAL CORPS, IN CONNECTION WITH LAWTON'S DIVISION AND THE DEPARTMENT OF SOUTHERN LUZON.

In July, 1899, the construction of a telephone system in Jolo and the laying of the Calamba-Taguig cable by a detachment of the company under the direction of Maj. J. E. Maxfield, Signal Corps, were the principal events.

Extensive repairs of destruction, due to typhoonic storms, were necessary.

In August, due to heavy rains and cessation of field operations, opportunity was taken to refit the city offices.

The central office was reorganized and refitted, a battery room and testing room being established.

Lieutenant Cunningham laid a cable (insulated wire) from Calamba to Los Banos.

In September standard—one hundred and twentieth meridian—time was arranged for by the Signal Corps and the director of the Manila observatory. Through relay arrangements the 11 o'clock signal was automatically repeated on the city lines and to Iloilo and Cebu through the cable to those places.

In October active field operations were resumed. The reports of the behavior of the detachments of this company during the severe fighting around Imus and Bacoor, October 2, appended hereto, tell a story of splendid heroism and unflinching devotion to duty.

I especially urge suitable official recognition of the services of Lieut. M. K. Cunningham for gallantry in action, and Sergts. Lynn S. Brown, David T. Flannery, Frank L. Beals, Gregor X. Miller, and Charles Barrett, for coolness and bravery in making repairs under heavy fire.

Corpl. Ole Gunderson was killed while heroically doing his duty under fire. Sergeant Beals was wounded.

Sergeant Flannery's achievement in sending important messages to Imus without any instrument, using the ends of the broken wire, is worthy of note. Recommendations are now being prepared looking to the award of certificates of merit or medals of honor to the proper ones.

The Signal Corps detachment under Lieutenant Clarke, Signal Corps, accompanying General Schwan's expedition south of Bacoor between October 6 and 13, performed excellent work.

Lieutenant Clarke specially commends the gallant services of First-class Sergt. C. R. Berry, Sergts. L. S. Brown, C. A. Guswiler, H. S. Hathaway, C. D. Smith, and O. V. Wilcomb in this expedition.

On October 17 I started north with a detachment consisting of Lieutenant Cunningham and 22 men, to report to General Lawton and accompany his expedition. We were equipped with material for construction of 20 miles of line (insulated wire).

The accompanying report, giving the details of operations during our advance from Arayat to Cabanatuan during the month, shows the difficulties produced by adverse climatic conditions, distance from base of supplies, and inadequate transportation.

In this month and November all the temporary lines between Arayat and Cabanatuan were recovered and replaced by pole lines.

Corporal Saulsbury's report of his capture and life among the insurgents is forwarded.

In November the detachment continued the advance with General Lawton's command, the struggle to carry the line through from Cabanatuan to San Jose during the heavy rains of November being an experience few would care to repeat. The line was a temporary one first, partly insulated and partly bare on the ground; later changed to insulated wire only.

The health of the men was badly broken by the exposure and severe work.

The performance of the "buzzer" in working over uninsulated bare wire is to be noted here. The freshets and impassable rivers and roads made it impossible to get material enough from Manila to carry the line north of San Jose, although, pursuant to General Lawton's instructions, the detachment went as far as Tayug.

In December the party began the return movement, reaching San Isidro December 9. On December 11 a temporary line was laid to San Miguel de Mayumo, following General Lawton's advance. By December 18 a pole line was built from San Miguel to Baliuag, the latter being terminus of line from Malolos on the railroad.

Sergeant Brown and party subsequently recovered the line from San Miguel to San Isidro. The successful use of rockets in locating Hayes's cavalry command in the hills near Biac-na-bato is to be noted.

The party returned to Manila by December 25.

On December 21 Lieutenant Gibbs and 8 men of this company constructed a telephone line from the pumping station to San Mateo.

It is difficult to name those whose services were most valuable during this expedition.

Lieutenants Cunningham, Rickard, and Colt all worked most loyally. Sergeants Berry, Brown, Wheat, Hathaway, Corporals Wolfe, Todd, Lyon, Mann, Privates Lee, Mack, Gribbelle, McKinney, Furlong, and Taylor performed most efficient services. Lieutenant Cunningham and Corporal Lyons's night repair lines near Arayat, the carrying of messages through dangerous country by Privates Peters and Gribbelle, the clever piece of night repair work performed by Lieutenant Cunningham and Sergeants Wheat and Hathaway near Baloc, and the untiring industry and skill in line work exhibited by Sergeant Hathaway and Private McKinney are especially worthy of mention.

In January extensive field operations in southern Luzon under Generals Bates and Schwan taxed the company's resources of men and material to the utmost. General Schwan's expedition from Taguig along lake shore to Binan—then across to Silang, Indang, and Naic, returning to Binan—from there to Calamba, Lipa, Batangas, thence to San Pablo, Nagcarlang, Majayjay, and Santa Cruz—expeditions being sent from the latter place south, into towns of Tayabas Province—were all followed by Lieutenant Clarke and a party of 9 men of this company, with native laborers and suitable transportation and material.

A cable was laid from Taguig to Binan under the direction of Major Maxfield, Signal Corps, assisted by a detachment of this company.

General Schwan cooperated with General Bates in Cavite Province, General Bates being accompanied by Lieutenant Cunningham and a party of 8 men of E Company, with native laborers and a due supply of transportation and material. Lieutenant Cunningham laid temporary line from Imus to Silang; afterwards accompanied General Schwan's expedition from Calamba to Batangas, putting up line in a workable condition after Lieutenant Clarke, who, in following the column, attempted only to make it workable for the "buzzer." The great distances covered by these detachments and the close communication kept up with the rapidly moving columns and existing lines are worthy of note.

Owing to difficulties of transportation and need of light wire suitable for following rapidly moving columns with the "buzzer," at the suggestion of the chief signal officer, Colonel Allen, I had the copper armor wires untwisted from 2 miles of river cable. This gave 40 miles of small copper wire, from which excellent results were obtained in the field in "buzzer" communication. The ingenious method of untwisting and reeling this wire was due to Sergeant Bohler, E Company.

Major Maxfield laid a cable from Los Baños to Santa Cruz, assisted by a detail from this company, completing it January 31.

The party under Lieutenant Rickard, consisting of 5 men of this company, who left the latter part of December for Aparri, arrived January 4, but could not accomplish anything before January 24. By the end of the month they had extended the line up the Cagayan River to Lallo.

Lieutenant Lyman and a party of 3 men of this company and native laborers constructed an excellent pole line from Bacoor to Naic (Cavite Province); also a line from Novaleta to Cavite outpost.

Lieutenant Colt, assisted by details from the company, reconstructed the telephone system north and east of the city centering at Deposito, and extended the telephone line from San Mateo to Montalban.

All lines north connecting with the railroad, except the Cagayan Valley, were turned over to Captain Carr, of F Company, February 1.

In February Lieutenant Clarke's and Lieutenant Cunningham's parties were still in the field. The former extended temporary lines from Majayjay to Tayabas, and the latter was occupied in completing the excellent pole line to be constructed between Calamba and Batangas.

Early in the month Lieutenant Lyman's party in Cavite Province had put up the line between Imus and Silang in permanent condition. Lieutenant Lyman was placed in charge of a party of 5 men of the company, and on February 15 embarked with General Bates's expeditionary forces for Camarines. His signal men on the several ships gave very useful services en route.

The party landed and proceeded with headquarters to Nueva Caceres, where construction began in March.

Lieutenant Rickard reported construction in the Cagayan Valley as far as Ilagan, 100 miles from Aparri. He worked under every natural difficulty, and his party suffered much from fever.

Lieutenant Gibbs, assisted by details from the company, built a telephone line from Pasig through Taytay and Antipolo to Morong over very difficult country. He then constructed a bamboo-pole line from Taguig to Binan, thus completing land communication from Manila to Calamba direct. Lieutenant Gibbs and a party of 5 men constructed a light permanent line connecting Santo Tomas and San Pablo in Laguna Province.

In March Lieutenant Lyman and party repaired and laid 88 miles of temporary line north to Libmanan, and south, following the advances in the Camarines, and constructed 21 miles of semipermanent lines. Although construction south went practically as far as Legaspi, the insurgents very soon destroyed the line as far as Iriga, that being as far as communication might be considered as established.

The energy and ability exhibited by Lieutenant Lyman in these operations is most commendable.

In the Cagayan Valley Lieutenant Rickard carried construction work from Ilagan to Estella, 47 miles.

Lieutenant Cunningham completed the permanent line from Batangas to Calamba, and built a semipermanent telephone line from Taal to Batangas. The latter part of the month detachments under his charge completed a pole line from San Pedro Macati to Guadaloupe Ridge, and rebuilt the temporary telephone line from Pasig to Morong.

Sergt. H. P. Allen, E Company, in charge of work around Tayabas, put up a temporary line for "buzzer" work between Tayabas and Lucena.

In April Lieutenant Lyman was kept so busy in repairing damages done to his lines by insurgents that he had no time for additional construction. His report for the month gives an excellent idea of the conditions existing.

Lieutenant Rickard's party was almost completely blocked by sickness and lack of supplies, due to difficulties of transportation.

In this month a detachment of F Company began working north from Cabanatuan to meet him.

Lieutenant Clarke and a detachment of 5 men, assisted by native laborers, made the "buzzer" line between Silang and Naic a light permanent line, permitting telegraph to be used direct to Naic from Manila via Bacoor and Silang.

Sergeant Allen constructed a "buzzer" line from Lucena to Antimonan through exceedingly difficult country, although continual cutting by the insurgents did not permit much use of it. He also constructed the "buzzer" line from Tayabas to Sariaya.

On May 1 the Cagayan district and party were turned over to Company F, Signal Corps.

Lieutenant Gibbs, with a party of 6 men and 10 native laborers, started the construction of a pole line from San Pablo, Laguna Province, to Sariaya via Tiaong and Candelaria. This was to secure communication with Tayabas from Calamba over some other route than by way of Santa Cruz, as south of Santa Cruz the insurgents had twice completely destroyed the temporary line—the last time beyond hope of repair. Poles had been carried across the lake to Calamba and hauled an average of 35 miles over bad roads to accomplish this. A wagon train was organized at Calamba, and the work went on through May. Lieutenant Gibbs fell sick, as well as most of his party and teamsters. Insurgents destroyed his lines several times. Sergeant Lyons, who took Lieutenant Gibbs's place, was sick, but kept working. At the end of the month only 10 miles had been built, so great was the sickness. More men would be sent out, only to go down with fever in a few days. Sergeant Lyons and Corporal Loghry deserve great commendation for their work under difficult circumstances.

Lieutenant Cunningham and a party of men and 10 natives went to Taal on May 20 to construct a line west from Taal. Upon arriving they found the line to Batangas in need of attention and devoted the rest of the month in reconstructing it.

Sergeant Beals and a party of 2 men, assisted by 4 natives, started the reconstruction of a pole line south of Santa Cruz. They completed 5 miles before the end of the month.

Lieutenant Lyman reported from the Camarines that he had reconstructed and made permanent the lines from Nueva Caceres to Libmanan and Pasacao.

Major Maxfield, Signal Corps, assisted by a detail of men from this company, laid a cable from Pasacao to Guinayangan, and First-class Sergeant Kennedy, in charge of a party of 5 men, left Manila May 18 to construct a line across the wild country between Guinayangan and Antimonan.

The report he sends shows the difficult character of the work after going out 5 miles.

First-class Sergeant Berry left May 27 for Antimonan with a party of 5 men to work toward Sergeant Kennedy.

In June Lieutenant Lyman's reports indicate that through lack of escorts and the lack of clearing out of the country, construction was not possible in the Camarines.

Lieutenant Cunningham completed a strong pole line from Taal to Balayan, on the south coast, although he and the party suffered greatly from sickness and climatic troubles.

Sergeant Lyons and party continued the struggle against sickness, bad roads, and delays, due to the long distance everything had to be hauled, and succeeded by the last of the month in carrying the line to Sariaya.

Sergeant Beals and party carried the line through from Santa Cruz to Tayabas, about 10 miles being insulated wire, along a mountain trail, the rest being light permanent line. Sergeant Beals's party was attacked by a large force of insurgents near Majayjay, who were successfully repelled without casualties in our party.

The reports of Lieutenant Kennedy and Lieutenant Berry from the Antimonan-Guinayangan line show great natural difficulties overcome and many repairs necessary of destruction wrought by roving ladrone bands.

Lieutenant Kennedy's work was especially difficult and praiseworthy.

Major Maxfield, Signal Corps, assisted by a detail from this company, laid a cable from Naic to Corregidor.

Lieutenant Hathaway then connected the Corregidor station by telephone to the light-house on the hill and installed a telescope, international code flags, etc., for signaling and reporting vessels.

The following shows, in a brief tabular way, the construction, by months, of lines built by this company.

A statement of stations on July 1, 1899, and changes since then, is also appended.

| | Temporary or field lines. | Permanent or pole lines. | Total temporary or field lines. | Total permanent or pole lines. |
|---|---|---|---|---|
| July, 1899: | *Miles.* | *Miles.* | *Miles.* | *Miles.* |
| Island of Jolo | .......... | 7 | | |
| Land end, Calamba-Taguig cable | .......... | 3 | | |
| Total | .......... | .......... | .......... | 10 |
| August, 1899: | | | | |
| Calamba to Los Baños, cable stranded okenite | .......... | 5 | | |
| Total | .......... | .......... | .......... | 5 |
| October, 1899: | | | | |
| Schwan's expedition, laid and recovered, insulated | 16 | .......... | | |
| Arayat to San Isidro, poles, bamboo, stranded | .......... | 18 | | |
| Lawton's expedition, insulated, partly recovered | 34 | .......... | | |
| Total | .......... | .......... | 50 | 18 |
| November, 1899: | | | | |
| Cabanatuan to San Jose, insulated | 30 | .......... | | |
| Cabanatuan to San Jose, laid and recovered (insulated) | 5 | .......... | | |
| San Isidro to Cabanatuan, repaired and stranded | .......... | 16 | | |
| Total | .......... | .......... | 35 | 16 |
| December, 1899: | | | | |
| San Isidro to San Miguel, insulated, laid, and recovered | 14 | .......... | | |
| San Miguel to Baliuag, stranded, poles | .......... | 16 | | |
| Santolan to San Mateo, bamboo, No. 9 | .......... | 7 | | |
| Total | .......... | .......... | 14 | 23 |
| January, 1900: | | | | |
| Bacoor to Naic, No. 9 and poles | .......... | 21 | | |
| Novaleta to Cavite outpost, No. 9 and poles | .......... | 3 | | |
| San Mateo to Montalbon, No. 9 and bamboo | .......... | 4 | | |
| San Felipe to Deposito, No. 9 and 20 poles | .......... | 1½ | | |
| Santa Mesa to Deposito, No. 9 and poles | .......... | 1½ | | |
| La Loma to Deposito, No. 9 and poles | .......... | 3 | | |
| Binan to Silang, small copper | 12 | .......... | | |
| Silang to Indang, small copper | 8 | .......... | | |
| Indang to Naic, small copper | 14 | .......... | | |
| Imus to Silang, insulated | 13 | .......... | | |
| Imus to Silang, No. 14 and bamboo | .......... | 13 | | |

| | Temporary or field lines. | Permanent or pole lines. | Total temporary or field lines. | Total permanent or pole lines. |
|---|---|---|---|---|
| | *Miles.* | *Miles.* | *Miles.* | *Miles.* |
| January, 1900—Continued. | | | | |
| Calamba to Batangas, repaired old Spanish and small copper | 40 | | | |
| San Pablo to Santa Cruz via Nagcarlan, Magdalena, and Majayjay, repaired and small copper | 22 | | | |
| Calamba to Binan, No. 9 and poles | | 12½ | | |
| Aparri to Lallo, No. 9 | | 13 | | |
| Total | | | 109 | 71½ |
| February, 1900: | | | | |
| Majayjay to Tayabas, repairs and insulated | 14 | | | |
| Lallo to Ilagan, No. 9 | | 86 | | |
| Calamba to Lipa, No. 9 and poles | | 21 | | |
| Santo Tomas to Tanauan, No. 9 and poles | | 3 | | |
| Pasig to Morong, stranded, bamboo | | 21 | | |
| Santo Tomas to San Pablo, No. 14 and bamboo | | 13 | | |
| Binan to Taguig, No. 14 and bamboo | | 16 | | |
| Total | | | 14 | 160 |
| March, 1900: | | | | |
| San Pedro Macati to Guadaloupe Ridge, No. 9, poles | | 2½ | | |
| Pasig-Morong line to Taytay, reconstructed | | 10 | | |
| Taguig to Manila, 1 additional wire, No. 9 and poles | | 12 | | |
| Nueva Caceres to Libmanan, No. 8, old | 13 | | | |
| Nueva Caceres to Pasacao, partly No. 14, bamboo | 16 | | | |
| Nueva Caceres to Guinobatan | 45 | | | |
| Buhi to Nabua | 14 | | | |
| Daraga to Legaspi | | 5 | | |
| Lipa to Batangas, No. 9 and poles | 16 | | | |
| Batangas to Taal, No. 9 (temporary poles) | 13 | | | |
| Ilagan to Estella, No. 9 | | 47 | | |
| Tayabas to Lucena, No. 9 | | 15 | | |
| Total | | | 101 | 107½ |
| April, 1900: | | | | |
| Silang to Indang, stranded and bamboo | | 8 | | |
| Lucena to Antimonan, repairs, No. 14 and insulated | 30 | | | |
| Tayabas to Sariaya, No. 14 and bamboo | 8 | | | |
| Total | | | 38 | 8 |
| May, 1900: | | | | |
| Batangas to Taal, reconstruction | | 13 | | |
| West of Guinayangan, No. 14 and insulated | | 5 | | |
| Nueva Caceres to Libmanan | | 13 | | |
| Nueva Caceres to Pasacao | | 16 | | |
| San Pablo to Tiaong, No. 9 and poles | | 10 | | |
| Santa Cruz, south, No. 14 and poles | | 5 | | |
| Total | | | | 62 |
| June, 1900: | | | | |
| Taal to Balayan, No. 9 and poles | | 15 | | |
| Tiaong to Sariaya, No. 9 and poles | | 12 | | |
| Antimonan to Guinayangan, No. 14 and insulated | | 50 | | |
| Santa Cruz to Tayabas, No. 14 and insulated | | 30 | | |
| Corregidor Island Telephone, lance and No. 14 | | 2 | | |
| Naic land end Corregidor-Naic cable, No. 14 | | 2 | | |
| Total | | | | 111 |
| Aggregate | | | 361 | 592 |

*Cables, Department Southern Luzon.*

| | Miles. |
|---|---|
| Taguig to Calamba | 20 |
| Taguig to Binan | 14 |
| Los Banos to Santa Cruz (16) | 16 |
| Cavite to Manila (repair) | 1½ |
| Pasacao to Guinayangan | 48 |
| Corregidor to Naic | 12 |

In the table below is given the statement of offices opened, closed, and transferred from the control of the company owing to change in territorial lines.

Besides those indicated as "opened by the company" were numerous field offices which were opened for from a few hours to a week or more.

| | |
|---|---|
| Offices in operation under control of Company E, July 1, 1899 | 21 |
| Turned over to Company E by Nineteenth Company, Volunteer Signal Corps, July, 1899 | 7 |
| Opened during the year by Company E | 64 |
| Closed during the year | 6 |
| Turned over to Company F, Signal Corps | 22 |
| Leaving telegraph offices controlled by E Company, July 1, 1900 | 64 |

Besides these, thirty-five telephone offices in Manila, and small local telephone systems at Imus, Santa Cruz, and Calamba and Corregidor, maintained by this company July 1, 1900.

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## APPENDIX No. 9.

### EXTRACTS FROM REPORT OF CAPT. DANIEL J. CARR, SIGNAL OFFICER OF VOLUNTEERS, ON SIGNAL WORK IN MACARTHUR'S DIVISION AND THE DEPARTMENT OF NORTHERN LUZON, JULY 14, 1900.

At the beginning of the fiscal year there were in operation 58 miles of line, Manila to San Fernando and Calumpit to San Luis, 15 offices cared for by 20 operators and 3 linemen. At the close of the year there were in operation 1,560 miles of wire, 26 telegraph offices, 28 telegraph and telephone offices, and 53 telephone offices, a total of 167 offices. The number of messages handled daily at the beginning of the year was less than 800, and at its close upward of 4,000.

These data cover the work of the Signal Corps in the Department of Northern Luzon for the year 1899–1900, yet that the credit which is due the officers and enlisted men of the Signal Corps may be made of record a general review of the work in more detail will be given.

From the date of the organization of the company, July 24, 1899, until August 14, 1899, it was commanded by Lieut. George S. Gibbs, Signal Corps, whose previous high standard of work was maintained.

July 1, 1899, found the headquarters of the Second Division under General MacArthur at San Fernando, Pampanga. July 3, Lieutenant Cunningham with a detachment finished constructing a line to outpost of Second Division. This work was begun by Capt. Edgar Russel, Signal Corps, U. S. V., who was then in charge of the Eighteenth Company, Volunteer Signal Corps, which organization, until August 5, was with the Second Division. On July 5 offices were opened at General Hale's headquarters, a mile northeast of San Fernando, and General Funston's headquarters, on the west flank, connecting them with each other and with General MacArthur at San Fernando.

On July 11 the town of Polo, 4 miles distant from Meycauayan, was connected with the main system, and on July 12 Malabon, 3 miles from Caloocan, was connected with the trunk line north.

On July 15 a half mile of line between Calumpit and San Luis was cut out by insurgents, but through the good work of Private Boggess communication was established on the 18th. Heavy rains and high winds during the month prostrated the lines in many places and interruptions were frequent but, due to hard work of the men, brief.

Before daylight on August 9 a detachment under Lieutenant Gibbs started an insulated wire north along the railroad track, accompanying General MacArthur and staff, and having communication with the flanks on the Bacolor and Mexico roads. The insurgents offered some resistance, but were driven back by the troops. The Signal Corps were under fire, but behaved with coolness, and business was promptly handled. Calulut and Sindalin, about 5½ miles north of San Fernando, was occupied and an office cut in General MacArthur's quarters at Sindalin.

On August 11 General MacArthur moved his headquarters to Santa Rita, and the line on the Bacolor road was extended to that town, about 6½ miles from San Fernando.

August 16 a line was built toward Guagua, but as that place was occupied by insurgents it was not continued beyond Betis. Col. Jacob Smith, Twelfth Infantry, having driven the insurgents from Angeles on the 17th of August, General MacArthur directed the extension of our line from Sindalin to Angeles that night, if possible. At 8.30 p. m. Lieutenant Gibbs and a party began the work, reaching Angeles at 2 a. m. This work was done in a terrible rain and under great difficulties, and is alike creditable to Lieutenant Gibbs and the men of his detachment—First-Class Sergeants Grabo and Nordquist, and Privates Collins, Ownbey, Perry, Stuber, Akers, Cauley, Joseph Smith, Young, Beckemeyer, Irwin, Cook, Bird, Doyle, Kinsman, Knapp, Wands, Horak, and Corporals Shinn and Nichols. On the 19th a detachment completed the line to Guagua.

Work on the construction of a permanent line from San Fernando to Angeles was begun on August 31 and completed on September 5. The recovered field wire was brought to Angeles.

The rapid advance of General MacArthur north from Angeles to Dagupan may fairly be cited as illustrative of the conditions under which the wires were laid and operated while actual armed resistance was shown by the insurgents. As a preliminary to the general advance north, movements against the insurgents at Porac, west, and Magalang, east of Angeles, were made on November 2 and 5, respectively. A signal detachment, with its instruments and material, accompanied these movements, and at Porac a telegraph office was opened immediately upon the beginning of the action, and General MacArthur notified. It was in this fight, or, rather, rout, that Col. (now Brig. Gen.) J. F. Bell, chased the "cavalry" of the insurgents into the mountains and effectually and permanently put it out of business.

On November 3 the command, except a garrison which was left at Porac and telegraphically connected with Angeles, returned to Angeles, and on November 5 the same signal detachment was at daylight with Col. (now Brig. Gen.) Jacob Smith, Seventeenth Infantry, who moved to clear out the insurgents reported at Magalang. Here, as on the advance against Porac, the work of the men of the detachment was all that the most exacting could demand. Three times they were under fire—at the Agno River crossing near Angeles, at Pandacaqui, and at the outskirts of Magalang. At the last-named the insurgents were in considerable force, probably eight hundred to a thousand, and made a stubborn resistance; the fight lasted nearly two hours. Colonel Smith reported 189 killed and wounded insurgents in these engagements. The signal detachment opened its office on the firing line, and the operators coolly sent and received messages while the bullets whistled over their heads. General MacArthurs's aid, Major Johnson, telegraphed from the field station, "All is well if bullets do come thick."

When the town proper was entered the line was also extended, and Colonel Smith made his report of the day's work to General MacArthur. In this report the colonel spoke as follows of the detachment of the Signal Corps: "The Signal Corps under Captain Carr rendered service that was marvelous in its benefits, and I can not speak too highly in praise of his work in keeping the lines of telegraph in perfect touch with me all the time."

On November 6 the detachment, leaving an operator at Magalang, returned to Angeles and made final preparations for the main advance north. The wire on hand being considered insufficient, a party was sent out on November 7 to recover the field wire, which had been laid to Porac on November 2.

On the 8th of November the column under General MacArthur's personal command moved north, initiating the fall campaign. Mabalacat was reached in the afternoon and a telegraph office established over the field line, which accompanied the advance. Work was at once begun to build a pole line from Angeles, in order that the field wire might be recovered and reused. On the 9th the field line laid from Angeles to Magalang on the 5th was recovered by a detachment of three men and myself. We left Mabalacat at daylight, rode to Angeles, coiled the wire in Magalang about 3 p. m., and were back in Mabalacat at nightfall.

On the 10th the pole line from Angeles to Mabalacat was completed and the field wire between these points taken to the latter place, retaped, and made ready for use on the advance north, which was resumed next day.

The defenses of Bamban were confronted about 8.30 a. m., November 11, an office opened in the field at the center of the attack and at hand of the commanding general. Driven from their strong position, the enemy retreated and the column entered Bamban at about 9.45 a. m. The fine railroad bridge had been dynamited and wrecked. Our supply of wire was carried over the river on the backs of the men and the break in the bridge was spanned. Every foot of the railroad wire that was left standing was utilized to economize on the field wire. This meant much additional work, but it was necessary.

On November 12 the troops left the railroad track, advancing toward Capas on roads east and west of it. The signal detachment consisted of 10 enlisted men and 12 Chinamen used as burden bearers. Good progress was made until a small bridge at kilometer 120 from Manila was crossed. There we were attacked by a small party of insurgents, fifteen or sixteen, about 600 yards west of the railroad. As the only arms in my party were revolvers, with which the Signal Corps men were supplied, I ordered the men to lie down on the east of the grade of the roadbed. We returned the insurgents' fire, and they did not advance, although they fired with considerable spirit. While in this position we were fired on by a few insurgents in our rear. Gen. Joseph Wheeler, in command of the column to the west of the railroad track, who had been charged by General MacArthur with looking out for the signal detachment, promptly sent a company to where we were and dispersed the enemy, which it afterwards appeared was part of a body turned by Gen. (then Col.) Jacob Smith, Seventeenth Infantry, who commanded the column on the right. The march was taken up and Capas reached shortly after and an office opened, and General MacArthur's business was promptly cleared. Leaving an operator at Capas, the march was resumed about 12.30 p. m., the signal detachment moving ahead with instructions from General MacArthur to go not more than 2 miles and there wait for Colonel Bell and the Thirty-sixth United States Volunteer Infantry. This we did, and rested about an hour when the troops came up. Colonel Bell asked if we could keep up with the infantry, and said if not he would put us in the lead and not permit the troops to pass us. He was informed that we could keep up, so we took the rear of the column and never lost touch with them. At Murcia slight resistance was encountered and the men were again under fire. The insurgents were driven out and an office cut in and General MacArthur advised of our advance. A rest of thirty minutes was given the troops, and the forward movement continued. We reached Tarlac at 7 p. m., and in less than five minutes General MacArthur, at Capas, had been advised of the opening of the Signal Corps telegraph office. I wish to especially note in connection with this movement that the Signal Corps detachment was the only body that made the march from Bamban to Tarlac (16 miles) that day. The Thirty-sixth Infantry had reached Capas on the previous night and had, therefore, a night's rest. The other troops marched from Bamban to Capas. It was a tiresome journey over the hot sand up the railroad roadbed, and the willingness and enthusiasm of the men at their work are worthy of remark. When Colonel Bell had selected his quarters, a line was run from the railroad to them, more than half a mile, so that it was long after midnight when the work of the day, telegraph reports, etc., were completed.

On November 13 General MacArthur reached Tarlac and an office was cut in his headquarters. This and the two following days, which were spent in Tarlac waiting for the subsidence of the river at the washout, 3½ miles north of Tarlac, were devoted to setting poles and stringing wires as far as the river, where a temporary office was opened.

On November 16 I reported by wire to General MacArthur that the river was fordable, and the advance was at once ordered. The washout was caused by a change of the river, and the change produced, it is said, by the insurgents. It was a mile wide, with here and there a bit of higher land out of the water. At the most practicable crossing for a wire the river was very deep and steep. Lieutenant Mitchell, Signal Corps, who had been sent to the washout two days before, had built a good bamboo raft, and on it all our instruments and material were safely ferried over. Two push cars, extemporized from old car wheels and logs, were a part of our equipment, and were of the greatest possible service. An office was cut in a short distance from the north bank of the river at a station called El Bendio, and the business of General MacArthur cleared. A short rest was given the men and the advance was resumed, repairing and using the railroad wire as far as possible. We reached Gerona about 3 p. m. The current was weak and Lieutenant Mitchell and two men went back to find and repair the trouble. The command kept on to Paniqui and the wire went with them. Lieutenant Mitchell's party found the wire in contact with a water-soaked log at the washout, and repaired it, but the line was open when we reached Paniqui—long after dark. It was repaired next morning. The track and roadbed of the railroad were reported intact north, and General MacArthur, leaving a garrison at Paniqui, proceeded to Moncada. We had found a place to sleep and were about to enjoy the repose which labor earns, when a courier from General MacArthur arrived with orders to proceed at once to Moncada. In less than an hour we had started laying our wire. The night was very dark and it rained at intervals. Moncada was reached about 1 o'clock a. m., and an office quickly opened, and General MacArthur notified that communication with Manila was established. All business was cleared and dry boards were sought after as a luxury. Although it rained, all the Signal Corps detachment slept in the open and slept wakelessly. They were wet and weary, but results accomplished through honest effort was a compensation for all inconveniences.

A short distance north of Moncada the insurgents had derailed an engine and several cars, and it was 3 p. m. when the obstruction was removed. Shortly afterwards the troops left for Bayambang by train; Lieutenant Mitchell, an operator, and a lineman were sent on it. An escort of six men with the Signal Corps detachment started up the track about 4 o'clock repairing the line, and reached Bautista de Bayambang about 11 p. m. to find the wire working splendidly.

On the 20th of November General MacArthur made a reconnoissance toward Dagupan. As no operator was available, I took Private Fitzpatrick as lineman, and, making repairs en route, cut in a station 3 miles south of Dagupan, clearing the General's business. Everything worked perfectly, and the General sent a telegram to General Otis complimentary of the service given him.

Dagupan was occupied and a telegraph office opened November 24, 1899, San Carlos having been opened the day previous.

While in general the preceding is illustrative of the work of the corps in the

Philippines, yet in many instances detachments under Lieutenants Lenoir, Mitchell, Stamford, and Duffy, who were charged with the construction of the lines from Dagupan to Subig, from Dagupan to Cape Bojeador, Bautista to Tayug, Cabanatuan to Humingan, Cabanatuan to Aparri, met and surmounted more difficult problems than fell to the detachment with General MacArthur's column.

Lieutenant Lenoir's work in building from Dagupan to San Felipe, 130 miles along the west coast, and from Dagupan to Narvacan, 100 miles on the northwest coast, is especially noteworthy. Lieutenant Mitchell's boundless energy, practical and theoretical knowledge of linework, were put to severe strains, but he met every difficulty in a most creditable manner. Particularly deserving of commendation is his permanent repairs on the line from Dagupan to Vigan, where poles over 80 feet high were erected in masonry to secure spans across the rivers. The maintenance of communication over the lines north of Dagupan is properly creditable to his and his detachment's excellent work.

Lieutenant Stamford's advance with the column of General Grant from Angeles to Orani, with spare materials and a necessarily small detachment, testifies to that officer's energy and ability. His work north from Subig was retarded by attacks from insurgents, which he handled well.

Lieutenant Duffy built a line from Vigan south to Narvacan, and from Vigan to Bangui, on the northwest corner of the island, in a way to bring great credit to himself and the detachment under his charge. The section assigned to his supervision has been well cared for, and this in the face of constant cutting of the wire.

Lieutenant Rickard, of Company E, temporarily assigned to duty with Company F since February 1, 1900, has been in charge of the Aparri line as far south as Solano. This section is, without doubt, a very difficult section to maintain, but through the tireless efforts of Lieutenant Rickard most satisfactory results have been derived.

A very creditable exhibition of line building was given by Lieutenant Mitchell in establishing communication for General Lawton between Bautista and Tayug.

A Signal Corps detachment had followed him to San Jose, Nueva Ecija. Between San Jose and Tayug the country was such that it was practically impossible to go farther with the line, and as the General had not been heard from in several days some anxiety was felt. The chief signal officer in Manila telegraphed directing me, if possible, to connect with the General, who was "in or near Tayug," suggesting that Lieutenant Lenoir, who was then near San Fabian, build from that point. This was not practicable, as Lieutenant Lenoir did not have the materials and it would take a long time to get them to him. A reconnoissance from Bautista de Bayambang, where I then was, with General MacArthur, gave a show of feasibility for that route and Lieutenant Mitchell was supplied with selected Signal Corps men and necessary materials and instructions to get to General Lawton with a wire over this road. He started on November 28 and on December 1 Tayug was reached with a pole line (there being no insulated wire available) and the General given a line to Manila.

The obstacles encountered served only as incentives to increased activity on the part of the detachment, and their task was well and quickly done.

On December 5, Lieutenant Gibbs, Signal Corps, U. S. V., with a detachment of 11 men of Company F and 3 men from Company E, left Manila by special train to Bocaue Bridge, from which point they were instructed to keep the advancing column of cavalay in touch with the main telegraph line. No. 9 was, just then, the only wire available, and as it was of course impracticable to erect the line and move with the rapidity demanded, the wire was laid on the ground and a type B field buzzer attached. Lack of transportation somewhat impeded the laying of the wire, but on the 7th the wire was in touch with the cavalry train, and in time to participate in the repulse of a small band of insurgents. The same day Norzagaray was reached and the excellent field instruments of the Signal Corps were equal to the task of handling business over 13 miles of heavy wire, laid on wet and muddy roads, without insulation. Part of the detachment, in command of Lieutenant Gibbs, made reconnoissances to the mountains northeast of Norzagaray and on the 10th found and destroyed an insurgent telegraph line which probably connected San Miguel and San Mateo.

On December 12 Lieutenant Mitchell with a detachment began the construction of a line from Bautista de Bayambang to San Miguel de Camiling (now briefly Camiling) province of Tarlac, with 3 enlisted men and 10 Chinamen. The distance between these points is about 11 miles and the work was completed on December 20. There is a long span at the Agno River, and the supports were as well put in as it was then practicable to do. They lasted until June 30, 1900, when the river rose and washed them away. They were replaced within a short time, and are now constructed in a way to withstand all ordinary attacks of the water. Having completed the Camiling line and returned to Bautista, Lieutenant Mitchell was sent, December 22, to Capas with 4 enlisted men and 15 Chinamen, to build a telephone line to O'Donnell, a distance of 10 miles. This work was begun on the 22d and was completed and communication established December 28, 1899.

In January Lieutenant Lenoir built a telegraph line from Seville to Santiago, 30 miles. Outfitting at Dagupan, he constructed and repaired line to Santa Cruz, Zambales, 55 miles, where he was held on account of a reported large insurgent force south. His camp was many times fired into, but luckily no one was hurt.

On January 5, 1900, Lieutenant Mitchell, with 4 enlisted men and 12 Chinos, began the construction of a telegraph line from Capas to Concepcion, but an emergency call coming for a line from Angeles to Magalang, he was hurried to Angeles, and on January 9 began the work with 7 Signal Corps men, 15 Chinos, and 4 bull carts; they were guarded by an escort of 13 men. This line is 7½ miles in length, and was completed on January 11. That the construction was not slighted in the rapid work is evidenced by the fact that communication has been practically uninterrupted since the reopening of Magalang until the close of the year.

During the same month Lieutenant Duffy, with a detachment from Companies E and F, Signal Corps, built a telegraph line from Vigan to Laoag—distance 52 miles. The line was cut behind him and was repaired successfully by Private John L. Headington, of Company E, with a small escort. The lieutenant had some apprehensions for the safety of this small detachment, as there were indications of insurgents in the immediate vicinity, and he had no means of knowing how many.

In February Lieutenant Lenoir and party constructed and repaired line from Alaminos to San Narciso, Zambales, 110 miles. He experienced much difficulty in crossing rivers and passing over mountain trails, and sustained several slight attacks from the insurgents. One might have proved very serious but for the coolness and good judgment which the lieutenant displayed on this occasion. His party of 6 signal men, 47 guards, 44 native laborers, and 16 bull carts was attacked on the 18th 3½ miles south of Botolan by a force of 125 men and 80 rifles, firing from the edge of the wood on the party, which was in an open space, skirted by sand hills, near the seashore. The engagement lasted three-quarters of an hour, the casualties on our side being two men wounded. The lieutenant, not knowing at the time how large the opposing force was and being apprehensive of losing his bull train or having it seriously crippled, he called for volunteers to take a message to Botolan, to which call Sergeant Blair and Private Bair responded, and at considerable danger performed the journey.

General Funston, who was in command of the expedition to Baler, province of Principe, on the east coast of the island, called for telegraph communication to Pantabangan, from which point he passed over the mountains.

On February 10 Lieutenant Mitchell began the building of a line north from Cabanatuan. On February 15 General Funston reached Bongabong with his expedition and found our telegraph station opened. From Bongabong to Pantabangan is about 25 miles, by a trail hardly passable for pack animals. At 3.30 a. m. the lieutenant, using caribao for pack animals, started for Pantabangan, which he reached at 2 a. m. on the 17th, with a good line, but with his detachment utterly exhausted. Perhaps no harder duty, for the same distance, has fallen to any detachment in the Philippines.

During the remainder of the month the lieutenant repaired and built the line to Carranglan, returned to Cabanatuan and repaired the field line from that place to San Jose.

During the same month Lieutenant Duffy built a line from Laoag to Cape Bojeador, distance 20 miles, and built a telephone line to Dingrass, distance 11 miles. The lines between Vigan and Dagupan were frequently cut by the insurgents, but promptly repaired.

In March Lieutenant Lenoir and his party worked back from San Narciso, Zambales, to Dagupan, 130 miles, several stretches of which had been torn down and were removed by insurgents. On this trip the lieutenant again sustained several attacks, notably between Dasol and San Isidro, without casualties to his men.

During March the insurgents were very active in Lieutenant Duffy's section; the line was frequently cut, and in one instance half a mile was destroyed.

The following tabulation, not heretofore reported, is given of the lines operated by Company F, Signal Corps, in the Department of Northern Luzon, on July 15, 1900. The measurements given are only approximately correct, the distances being rather over the figures given:

| | Miles. |
|---|---|
| Manila to Bangui section (two wires from Manila to Dagupan) | 491 |
| Caloocan to Malabon | 3 |
| Guiguinto to Bulacan | 3¾ |

| | | Miles. |
|---|---|---|
| Manila to Bangui section—Continued. | | |
| Malolos to Bigaa loop | | 60 |
| Malolos to Convent | | ¼ |
| Calumpit to Hagonoy | | 15 |
| Apalit to Santa Ana | | 20 |
| San Fernando to Lubao | | 18 |
| Angeles to Magalang | | 6 |
| Angeles to Orion | | 40 |
| Capas to O'Donnell to Concepcion | | 15 |
| Tarlac to La Paz | | 10 |
| Gerona to San Juan de Guimba | | 20 |
| Paniqui to Cuyapo | | 12 |
| Bautista to San Clemento to San Ignacio | | 25 |
| Calasiao to Santa Barbara | | 6 |
| Magaldan to San Manuel | | 39 |
| San Fernando to La Trinidad | | 40 |
| Vigan to Bangued | | 30 |
| Cabugao to Salamogue | | 6 |
| Badoc to Currimao | | 15 |
| Laoag to Beach to Dingras | | 20 |
| Bautista to Cabanatuan | 70 | |
| Rosales to Villasis to Balingao | 8 | |
| Tayug to San Nicolas | 6 | |
| | | 84 |
| Total | | 979¼ |
| Dagupan to Subig section | | 140 |
| Lingayen to Urbistondo | | 30 |
| Alaminos to Agno to Bolinao | | 40 |
| Total | | 210 |
| San Fernando Aparri section | | 300 |
| San Isidro Penaranda | | 10 |
| Cabanatuan to Aliaga | | 10 |
| Total | | 320 |
| Manila to Deposito to Montalban | 25¾ | |
| Pasig to Morong to Tanay | 25 | |
| | | 50¾ |
| Grand total | | 1,560 |

The following data for the fiscal year 1900 are compiled from the records of Company F:

| | |
|---|---|
| Gain: | |
| By transfer from the line in the Philippines | 24 |
| By enlistment | 1 |
| By reenlistment | 3 |
| By assignment from the United States | 185 |
| Total | 213 |

| | |
|---|---|
| Loss: | |
| Death | 2 |
| Honorably discharged: | |
| To accept commission | 2 |
| Expiration term of service | 4 |
| Certificate of disability | 3 |
| Per G. O. No. 40, 1898 | 1 |
| Dishonorably discharged per sentence general court-martial | 2 |
| Transferred to Company H | 6 |
| Total | 20 |

| | |
|---|---|
| Strength of Company June 30, 1900 | 193 |
| Maximum percentage of sickness | 7.8 |
| Minimum percentage of sickness | 1.9 |
| Average percentage of sickness | 6.3 |

Engagements, skirmishes, etc.:

August 9, 1899, advance on Sindalin and Calulut.
August 16, 1899, in the vicinity of Angeles.
October 12, 1899, advance on Arayat.
October 16, 1899, defense of Angeles (night attack).
November 2, 1899, advance on Porac.
November 5, 1899, advance on Pandicaqui and Magalang.
November 8 to 24, 1899, northern advance from Angeles to Dagupan, Bamban, near Capas, Murcia.
November 10 to 20, 1899, capture of San Fabian and advance on San Fernando de la Union, with General Wheaton's expedition.
December 1 to 15, 1899, General Grant's advance, Angeles to Orani.
December 5 to 10, 1899, Colonel Hood's advance on Norzagaray and vicinity.
January 31, 1900, San Narciso, Zambales.
February 1, 1900, Lieutenant Stamford's party attacked near Subig, Zambales.
February 18, 1900, Lieutenant Lenoir's party attacked near Botolan, Zambales.
April 6 to 9, 1900, Colonel Smith's advance on Macabulus near Mayantoo, province of Tarlac. This was the last expedition with which the Signal Corps was directed to lay a wire. The expedition left Bautista de Bayambang on the afternoon of the 6th, arrived at Camiling at 7 p. m., left Camiling at 11 p. m., strung wire all night, keeping in touch with the column until 4.45 a. m. on the 7th, when the supply of field wire was exhausted. A shorter route being discovered the wire was taken up on the afternoon of the 7th and relaid that night to Mayantoo. Report of the taking of Ariel, the stronghold of Macabulus, by Col. Jacob Smith, Seventeenth Infantry, was promptly made to General McArthur at Bautista. The wire was taken up on the night of the 8th when the troops returned to Camiling.

Attention is invited to the very low average percentage of sickness of the company. Considering the exposure to which the men were necessarily subjected, it speaks well of the care which they took of themselves.

Lieut. B. O. Lenoir, Signal Corps, was detailed on November 4, 1899, in charge of the detachment of men from Company F to accompany General Wheaton on his expedition against the insurgents who had assembled in large numbers near San Fabian. Lieutenant Lenoir's work on this occasion was most commendable. From a platform in a tree top he established and maintained uninterrupted communication with the Navy with the heliograph, flag, and flash light for a number of days. No more striking instance of good judgment, ingenuity, and application has been exhibited in the work of the Signal Corps than on this occasion.

Not the least important duty that was assigned to F Company was the handling of all trains on the railroad between Manila and Dagupan. When the road was taken by the United States troops train dispatching became an absolute necessity, as there was no schedule and all of the many trains were extras.

When order was established time-tables were prepared by Signal Corps men, and the important and exacting duty of running these military trains was systematized.

At Angeles, as soon as the headquarters of the Second Division were removed thereto, a signal station was established on the ledge of the church tower, which gave a view extending well into the territory occupied by the insurgents. Men were on duty day and night, and everything seen of possible benefit was logged and reported to the commanding general. From this elevated position the signal stations of the enemy near Bamban were plainly seen and the movements of the insurgents noted.

The explorers and the Brashear telescopes were mounted on tripods on and in the tower, and the first-named glass gave much superior results.

An engine and a boiler have been installed at Dagupan, and upon the arrival of the storage battery from the United States it will be set up and the modern method of supplying current to lines adopted.

I wish to make acknowledgment of assistance rendered in my work to the following-named officers:

To Maj. R. E. Thompson, Signal Corps, for most valuable instructions and advice.

To Maj. Robert R. Stevens, chief quartermaster Department of Northern Luzon, who met the frequent requests for transportation, often unexpected by him, in a prompt and liberal manner.

To Capt. William L. Sibert, Engineer Corps, who during his management of the railway extended much assistance in various ways.

To First Lieut. John J. Haisch, Thirty-sixth Infantry, who on all occasions extended to me every possible aid. Particularly is acknowledgment due for the special train given me to hurry signal supplies to Calumpit for a signal party that was called for to accompany General Young's column on October 11, 1899. This call was not made on me until about 11 a. m. October 10, the regular train having left at 9 a. m.

To these and other officers whose aid was frequently invoked the thanks of the Chief Signal Officer of the Department of Northern Luzon are due.

I am indebted to Lieut. Niels P. Yurgensen, Signal Corps, for his excellent work in caring for the affairs of the company during my absence at the front, and later for his energy and skill in constructing telephone lines—Balanga to Orion, Morong to Binangonan and Tanay, San Mateo to Novaliches, Guiguinto to Bulacan. His technical knowledge of the instruments and appurtenances of the Siginal Corps were of great benefit.

To the following-named men belong the credit after this:

To First-class Sergt. Earle W. Binkley, who as first sergeant of the company has labored conscientiously and ably in the very difficult and important clerical work in connection with the administration of the affairs of the company. This work was so well done as to merit and receive the commendation of the chiefs of more than one department.

To Sergt. John Hagany, for energy and ability in connection with the care and shipment of supplies to the front.

To Corpl. Harry S. Robinson, who has zealously and with knowledge performed the duty of company clerk.

For the correct and prompt transmission of messages over a field line from Angeles to Dagupan, 60 miles, credit is due to First-class Sergt. Joseph Smith, in charge; First-class Sergt. Charles F. Nichols, Sergt. Noel P. Akers, and First-class Private Henry B. Harrison, operators at Angeles. Their ability and good judgment were manifested and tireless energy shown by them in the discharge of their duties.

First-class Sergt. Edward C. Bird, whom I took from Angeles, as the operator for General MacArthur on the advance north, is highly commended, not alone for his skill as an operator under all conditions, but for the unusual energy he displayed in doing, while himself a sick man, two men's work.

First-class Sergt. John C. Wessels repeatedly volunteered for the most arduous service, and his physical stamina was equal to the severest strain.

First-class Sergt. (now second lieutenant Signal Corps) Burt E. Grabo, whose services have been of great value. He has been highly recommended by every officer under whom he has had duties to perform. Intelligence, application, and tirelessness have been brought to his every task, and in work assigned to him, charge of district detachments, he has acquitted himself with great credit.

First-class Sergt. (now second lieutenant Signal Corps) Magnus Nordquist, for absolute thoroughness in building lines with separate detachments. He has been recommended by Lieut. H. W. Stamford for bravery.

First-class Sergt. George D. Hall, for excellent work in charge of a detachment recovering the insulated wire between Arayat and Candaba. He also has been recommended by Lieutenant Stamford for certificate of merit.

Sergt. Marshall A. Cook, who, on November 13, volunteered to go, and with six Chinamen went, from Tarlac to Murcia at 11 p. m. and brought to Tarlac needed wire, and also rations for the detachment.

To Sergt. Jeremiah C. Holly, who, at midnight of November 16, volunteered and accompanied myself from Paniqui to Gerona to repair the line. This after a hard day's march.

For meritorious service at Magalang November 5, 1899: First-class Sergt. Burt E. Grabo (now second lieutenant Signal Corps), First-class Private Marshall A. Cook (now sergeant), First-class Private Alvin Ownbey (now sergeant), First-class Privates Burt S. Knapp, and Homer H. Cudaback.

Three men of the company, First-class Privates John G. Desmond, Frank Stone, and Leland S. Smith, were captured by the insurgents. Smith and Stone were recaptured by Col. (now Gen.) Luther R. Hare, in the province of Cagayan, and Desmond escaped.

The accounts of the capture, escape, and recapture are inclosed herewith.

In closing I wish to express my high appreciation of the excellent manner in which the men of the company have performed the unusually arduous and important duties which fell to them. The major portion of such credit as belongs to the Signal Corps for work in the Department of Northern Luzon is theirs.

## APPENDIX No. 10.

### LIST OF THE ENLISTED MEN OF THE SIGNAL CORPS SPECIALLY NAMED FOR BRAVERY OR DISTINGUISHED SERVICE IN ACTIVE CAMPAIGN.

| Name. | Rank. | Services performed. |
|---|---|---|
| *Commended by Maj. George P. Scriven.* | | |
| Jay M. Faunce | First-class sergeant | For steadiness under fire when signaling the ships during action at Antique, island of Panay, Jan. 18, 1900. |
| Philip J. Golden | Sergeant | For meritorious conduct in an affair near Oton, Panay. |
| Alexander E. Whitworth | Corporal | |
| *Commended by Capt. Edgar Russel.* | | |
| Lynn S. Brown | First-class sergeant | For coolness and bravery in making repairs under heavy fire during severe fighting near Imus, P.I., Oct. 2, 1899 (in which Beals was wounded). |
| David T. Flannery | do | |
| Frank L. Beals | Sergeant | |
| Gregor X. Miller | do | |
| Charles Barrett | do | |
| Clifton R. Berry | First-class sergeant | Most efficient services on Lawton's expedition. |
| Lynn S. Brown | do | |
| Rush P. Wheat | do | |
| Henry S. Hathaway | do | |
| Walter E. Wolfe | do | |
| Robin J. Todd | do | |
| Frank C. Lyon | do | |
| Charles H. Mann | do | |
| George Lee | Sergeant | |
| James R. Taylor | do | |
| Harry S. Gribbelle | Corporal | |
| Thomas J. Furlong | do | |
| Ernest A. Mack | do | |
| Edward M. McKinney | Private | |
| Frank C. Lyon | First-class sergeant | For night repair of lines near Arayat. |
| Frank E. Peters | do | For carrying messages through dangerous country. |
| Harry S. Gribbelle | Corporal | |
| Rush P. Wheat | First-class sergeant | For night repair work near Baloc. |
| Henry S. Hathaway | do | |
| Henry S. Hathaway | do | For untiring industry and skill in line work in trying situations. |
| Edward M. McKinney | Private | |
| Henry P. Allen | Sergeant | For construction of line between Tayabas and Lucena in March and in April from Lucena to Antimonan, through exceedingly difficult country and in spite of frequent interruptions by insurgents; also built line from Tayabas to Sariaya. |
| *Commended by Capt. Daniel J. Carr.* | | |
| Ernest Boggess | First-class private | For excellent work in restoring line cut by insurgents July 15 near Calumpit. |
| Burt E. Grabo | First-class sergeant | For extending the telegraph line from Betis to Angeles in terrible rain and under great difficulties during the night of Aug. 17. |
| Magnus Nordquist | do | |
| Noel P. Akers | do | |
| Edward C. Bird | do | |
| James H. Irwin | do | |
| Charles F. Nichols | do | |
| Joseph Smith | do | |
| Joseph A. Beckemeyer | Sergeant | |
| Thomas H. Cauley | do | |
| Cleveland C. Collins | do | |
| Marshall A. Cook | do | |
| Michael H. Doyle | do | |
| Frank A. Horak | do | |
| Alvin Ownbey | do | |
| Robert L. Stuber | do | |
| Frank Kinsman | Corporal | |
| Bert S. Knapp | do | |
| Charles H. Shinn | do | |
| Byron O. Young | do | |
| Eugene L. Perry | First-class private | |
| Samuel A. Wands | do | |
| John P. Fitz Gerald | do | For services in cut-in station 3 miles south of Dagupan, and clearing importani dispatches from General MacArthur to General Otis. |
| John L. Headington | do | For repairing line under dangerous conditions between Vigan and Laoag. |
| Alexander C. Blair | Sergeant | For services as volunteers in summoning from Botolan relief for detachment attacked by insurgents. |
| Alfred C. Bair | do | |

## LIST OF THE ENLISTED MEN OF THE SIGNAL CORPS SPECIALLY NAMED FOR BRAVERY OR DISTINGUISHED SERVICE IN ACTIVE CAMPAIGN—Continued.

| Name. | Rank. | Service performed. |
|---|---|---|
| *Commended by Capt. Daniel J. Carr*—Continued. | | |
| Noel P. Akers | First-class sergeant | For ability, energy, and judgment in operating the field line between Angeles and Dagupan during active campaigning. |
| Henry B. Harrison | do | |
| Charles F. Nichols | do | |
| Joseph Smith | do | |
| John C. Wessels | do | For repeatedly volunteering for most arduous services during active campaigning. |
| George D. Hall | do | For recovering under dangerous conditions field line between Arayat and Candaba: also recommended by Lieutenant Stamford for certificate of merit. |
| Marshall A. Cook | Sergeant | For volunteering to and bringing, during the night of Nov. 13, from Murcia wire much needed at Tarlac. |
| Jeremiah C. Holly | do | For volunteering and repairing at midnight of Nov. 16 field line between Panique and Gerona. |
| Burt E. Grabo | First-class sergeant | For meritorious services during the engagement at Magalang, Nov. 5, 1899. |
| Marshall A. Cook | Sergeant | |
| Alvin Ownbey | do | |
| Bert S. Knapp | Corporal | |
| Homer H. Cudaback | First-class private | |
| *Commended by First Lieut. Walter L. Clarke.* | | |
| Clifton R. Berry | First-class sergeant | For gallant services during the severe expedition into Cavite Province, Oct. 6-13, 1899. |
| Lynn S. Brown | do | |
| Charles A. Guswiler | do | |
| Henry S. Hathaway | do | |
| Owen V. Wilcomb | do | |
| Clarence D. Smith | Sergeant | |
| *Commended by First Lieut. Henry W. Stamford.* | | |
| Magnus Nordquist | First-class sergeant | For gallantry and coolness displayed in affairs near San Marcelino, Subig Pass. |
| George D. Hall | do | |
| Frank C. Lyon | do | For work on line to establish communication between Tayabas and Calamba. |
| Robert Loghry | Sergeant | |

## APPENDIX No. 11.

### REPORT OF CAPT. EDGAR RUSSEL, SIGNAL CORPS, ON MANILA TELEGRAPH AND TELEPHONE SYSTEMS.

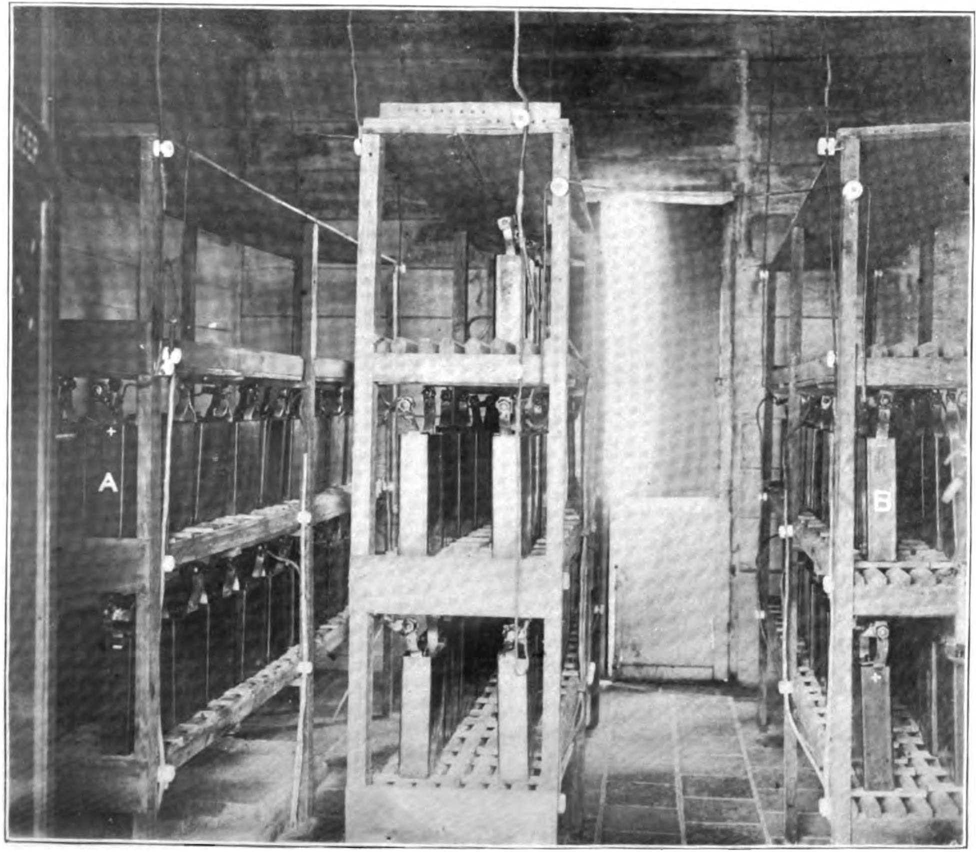
COMPANY E, UNITED STATES SIGNAL CORPS,
*Manila, P. I., July 1, 1900.*

I have the honor to submit the following supplementary annual report of operations of Company E in establishing the city telegraph and telephone systems, central office equipment, and machine shop:

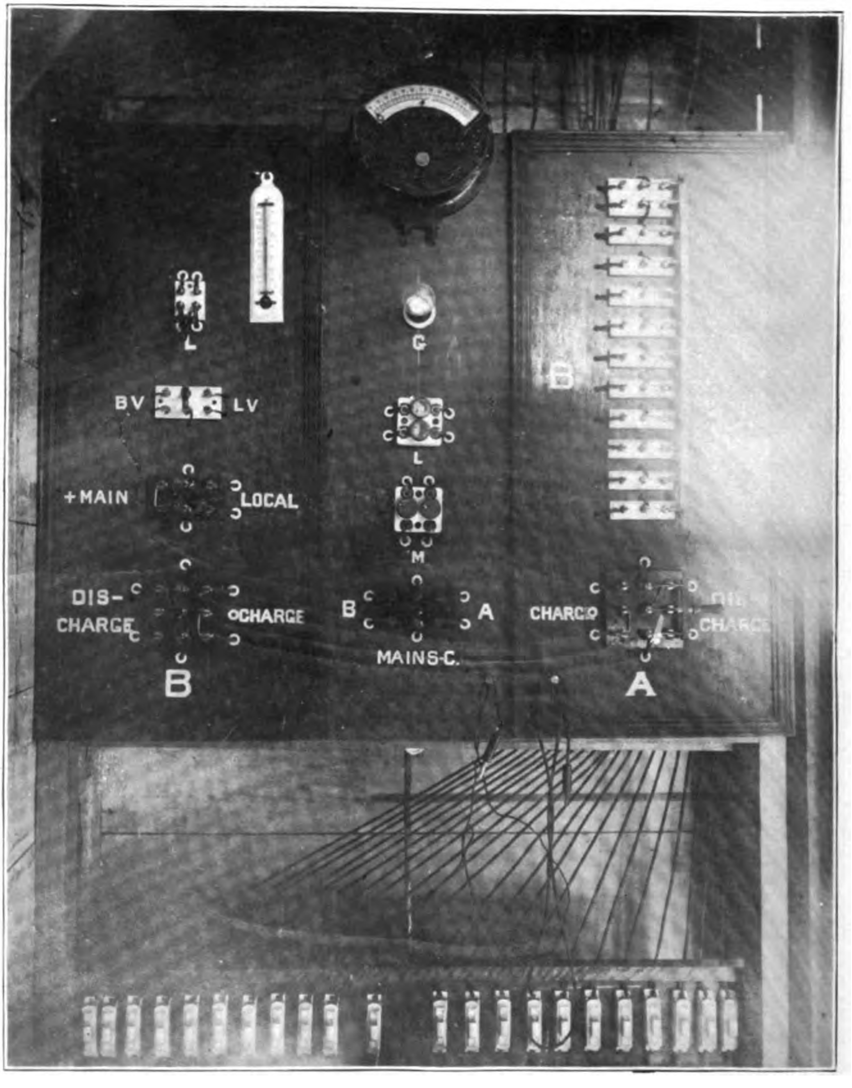
On July 1, 1899, the city telegraph system included eleven offices, seven of which were on a local line, the other four being local offices on lines leading to outside stations. Since that time one other local office has been established.

The lines were hastily constructed affairs, partly the old Spanish lines and wires put up on the city electric light and telephone poles. Until March, 1900, owing to the impossibility of obtaining suitable poles, no reconstruction could be attempted. At this time the arrival of cross-arms, pins, etc., and our procuring good poles, permitted the construction to proceed. About 250 30-foot poles, carrying from 2 to 16 No. 9 galvanized wires, have been put up. Under these were put the cross-arms carrying the telephone wires. As many as 40 No. 14 galvanized wires are on some of the poles.

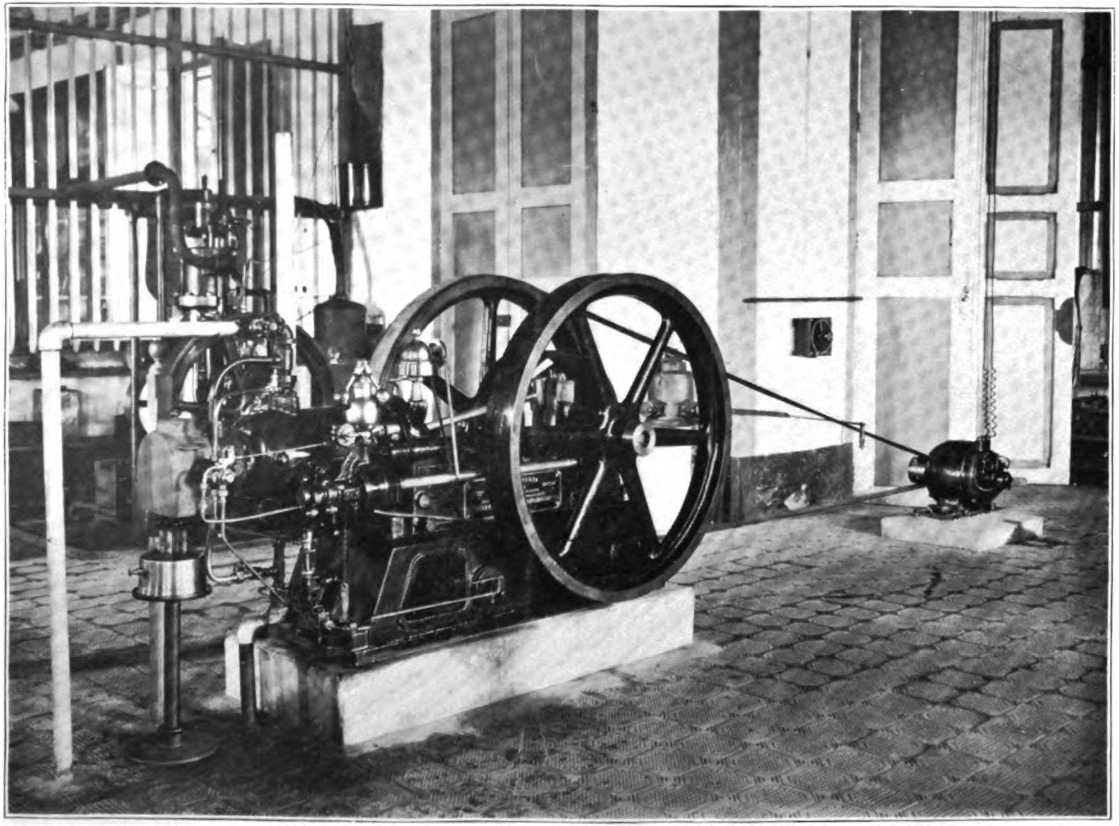
At the central office all the wires are "dead-ended" on a large pole, the telegraph wires being attached to lead-covered cable and carried under the floor to the switchboard. The telephone wires are attached to heavily insulated wires and brought down to the new telephone central in another room of the same building. All wiring in the central offices is concealed.



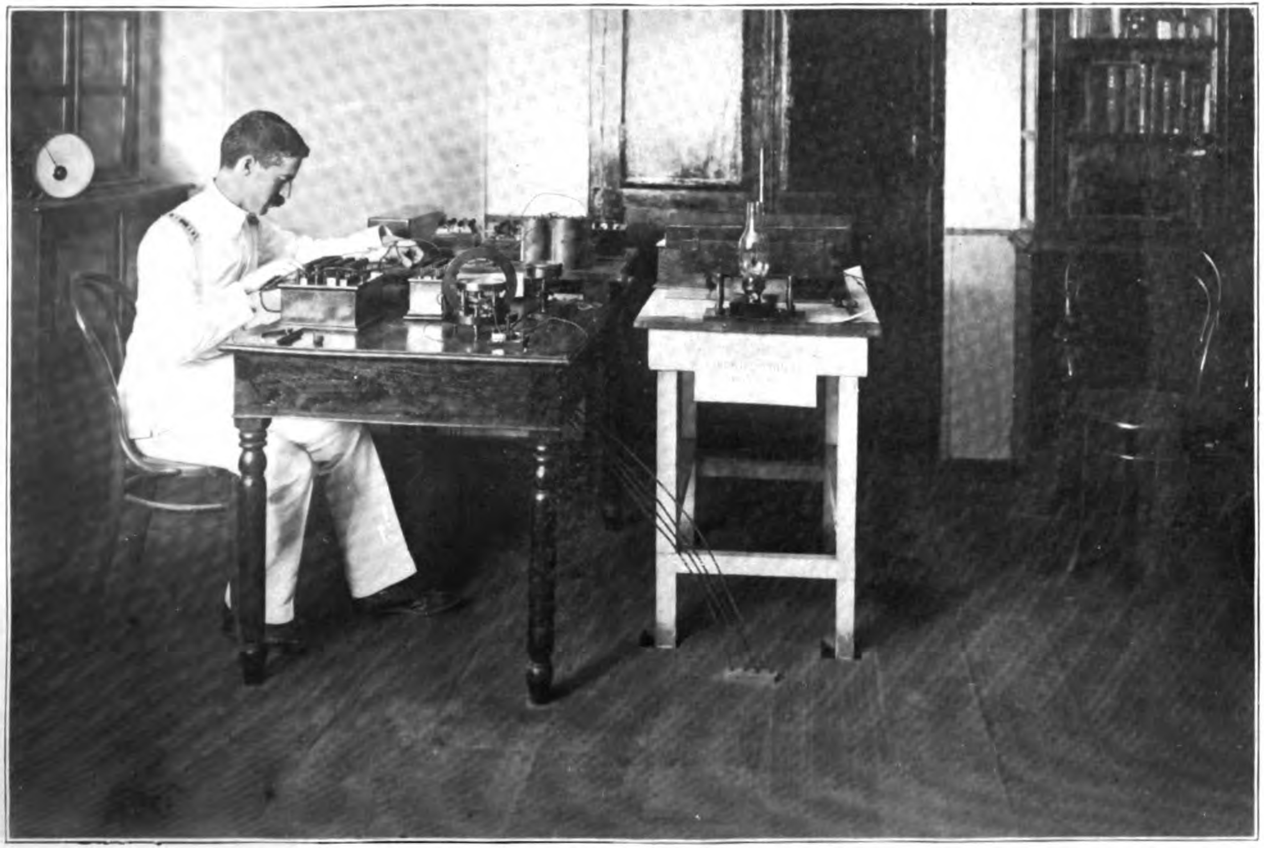
BATTERY ROOM, CENTRAL OFFICE, MILITARY TELEGRAPH, MANILA, P. I.



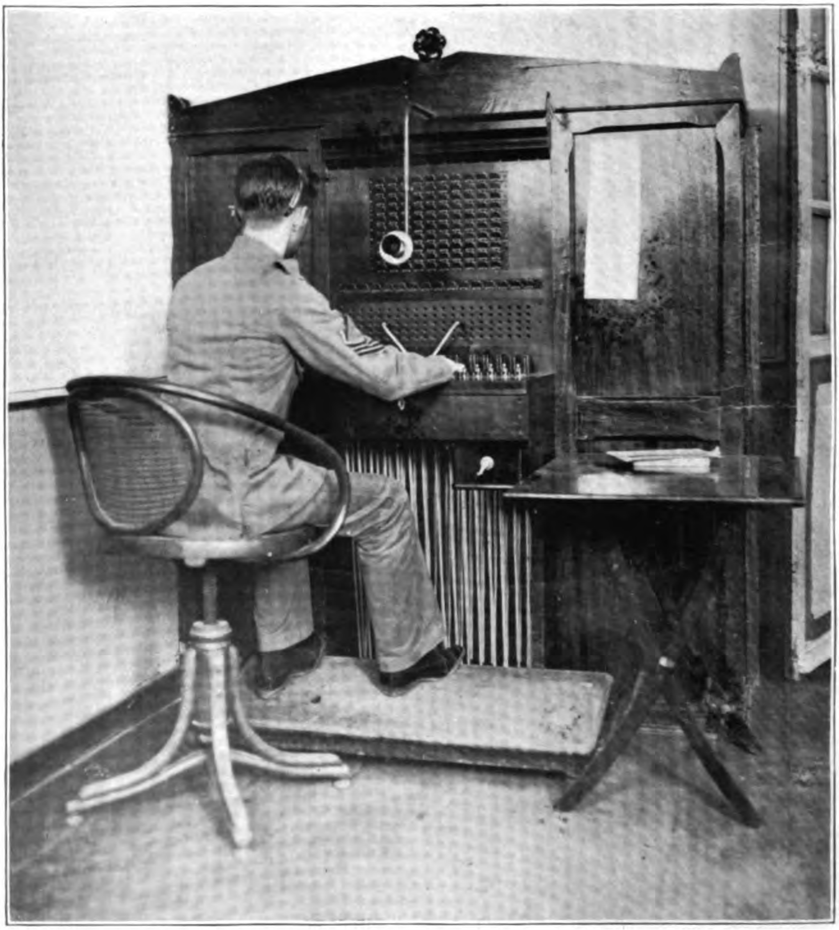
BATTERY ROOM SWITCH BOARD, CENTRAL OFFICE, MILITARY TELEGRAPH, MANILA, P. I.



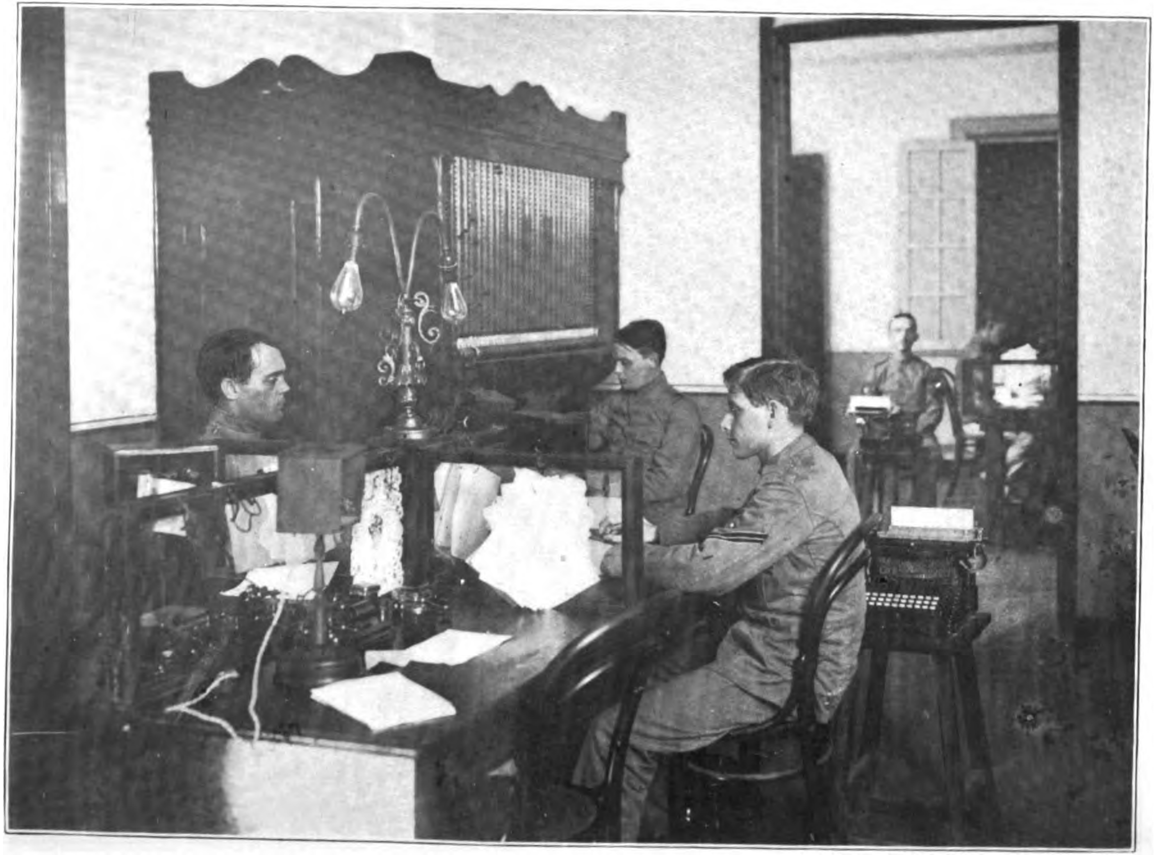
OIL ENGINE AND 24-K. W. DYNAMO, SIGNAL CORPS MACHINE SHOP, MANILA, P. I.



TESTING ROOM, CENTRAL OFFICE, MILITARY TELEGRAPH, MANILA, P. I.



SWITCH BOARD, CENTRAL TELEPHONE OFFICE, MANILA, P. I.



OPERATING ROOMS, CENTRAL OFFICE, MILITARY TELEGRAPH, MANILA, P. I.

In August, 1899, the central office, owing to strenuous field work, was still in a makeshift condition. At that time it was refitted, a glass-partitioned operating table put in, the office was re-wired, the battery taken out of a dark closet and installed in a tiled floor back room on good racks. A testing room was established, a "Wheatstone bridge" set being assembled out of the junk heap of the old Spanish School of Arts. It proved to be a very good testing set.

Meantime Major Maxfield turned over from the *Hooker* a D'Arsonval galvanometer, with two interchangeable coils, and universal shunt, telescope, and scale; 1/3 M. F. condenser; reversing key and discharge key; all made by Willyoung.

Since that time the room has been furnished with glass cases for instruments, and quite a number of small galvanometers, telephones, and useful small appliances received from the School of Arts have been placed there. A W. U. tangent galvanometer is used for measuring line currents, having been calibrated by the copper voltammeter method. An ohm-meter was received in January and has proven a most useful instrument. Portable Weston voltmeters and ammeters are the most recent useful acquisitions.

The fitting out of the machine shop began in August, soon after the electrical property of the Spanish School of Arts was turned over to the undersigned. A mass of instruments and supplies were piled in a building on Palacio street in walled city. The metal-working shop, engine and dynamo room, and wood-working shops pertaining to the school are situated in the large building in front of the general hospital. In the first shop we found a power shears and punch, drill, shaper, metal planer, a power and a foot lathe. These machine tools were driven by a 6-horsepower oil engine of German make. These machine tools and the engine were well installed and in fair condition. Most of the small tools had been removed.

In the second were a dismantled switch board, a Paris Edison bipolar 4-kilowatt dynamo, 2½-kilowatt gramme, and a Brown-Boveri arc dynamo, of about 2-kilowatt capacity. A large motor (type not given) was also partially set up. These were arranged to be belted to very well set up countershafting, driven by a 20-horsepower engine made in Manchester, England.

The latter and the upright boiler and fittings in a small outbuilding were in fair condition.

The woodworking shop was in great confusion. In it we found numerous work benches, and a planer, two circular saws, mortising machine, and band saw installed. All the latter were in bad repair, with many parts missing. A partly set up storage battery of thirty cells (French type) was found in this room. The whole building was in great disorder and required much cleaning out.

By requisition from the quartermaster and some purchases the shops were put in order for repair work. In January the arrival of an oil engine, a 6-kilowatt 4-pole general electric compound dynamo, a 2½-kilowatt bipolar general electric dynamo, two small charging switch boards, 110 type "E-7" and 125 "E-5" chloride accumulators made it possible to proceed with the setting up of a plant for replacing the bluestone cells in the central office.

There were already 350 of these, and the room was badly overcrowded.

These cells were taken out and set up temporarily on the floors of adjoining rooms, while the 120 "E-5" storage cells were put on the racks of the battery room. Six of the "E-7" cells were put in to be used as locals. Temporary switching arrangements were provided.

Only half of the battery was connected to the telegraph lines, it being so arranged that these cells were connected 60 in series, while the other half could be connected in two groups of 30 each for charging. Wires leading from every fifth cell made it possible to give any line voltage up to 120, in gradations of 10. Incandescent lamp resistances and fuses were put in as safety devices.

Meantime at the machine shop, the general electric 6-kilowatt dynamo had been placed on the base from which the old Edison machine had been moved, and one of the new switch boards put up.

The change from gravity cells to storage cells was accomplished without interruption to the telegraph service. It was fortunate they were put in, for the rapid extension of lines would have soon put it beyond our power to have installed enough gravity cells.

A No. 5 copper wire connected the central office with the dynamo, a distance of about 700 yards.

Since that time at the machine shop, 60 of the "E-7" storage cells have been set up. These are used to light the central offices.

The machine tools have been put in order, and are much used for construction and repair work. New small tools have been recently sent from the United States.

The oil engine has been excellently set up on a brick foundation, and is used to drive the small 2½-kilowatt dynamo, thus giving an auxiliary plant; a neat battery room switch board has been constructed, using the switches received from the United States.

Practically all the work in the machine shop has been done by First Class Sergt. W. R. Taylor and Sergt. F. W. Bohler, of this company.

In the latter part of February, upon its arrival, the new 50-strap telegraph switch board, fitted with jacks, cords, etc., was put in the central office, a suitable cabinet being built for it, as shown in accompanying diagram.

Another operating table of four places was put in the room where the switch board is, giving us two additional places and making it much easier to carry on the work, which at that time had come up to about 1,000 messages per day in central office alone. The office was rewired throughout with lead-covered wires running under the floors. Electric lights were installed, fed by the storage battery in the machine shop. In June the finishing touches were put on the battery room. It was rewired throughout and a new switch board put in, made up from the new switches received from the United States, for doing, in an easily understood way, the rather complicated switching required. A diagram of racks and switch board is appended. In this, the setting up of the central office switch board, the rewiring of central office, and the fitting up of the testing room, I am indebted to the great technical skill and knowledge of Lieutenant Hathaway.

The military telephone system was inaugurated in September, 1898, when a few telephones were put in for the use of the chief of the military police. A 10-drop switch board was established at police headquarters, that being the limit of the service until May, 1900. A 100-drop metallic circuit board was received from the United States in April, and that was installed in one of the rooms adjacent to the operating room at the central telegraph office. First Class Sergeant Peters, Company E, who had been in charge of telephone matters, then inclosed this board in a substantial cabinet, and took charge of constructing the lines. These are No. 14 galvanized wire.

At the close of June, 33 stations had been put in, served by 21 lines, the "two-party" line system prevailing. These telephones are installed in many police stations and in various offices and storehouses pertaining to military administration, and give much appreciated service.

A wire connects with the City Exchange, permitting us to make use of the 11 city telephones assigned for Government use under the charter. The instruments are excellent ones, and, to the users, make the city instruments compare most unfavorably with ours. The ability and energy of First Class Sergt. F. E. Peters in installing this system and in putting up city telegraph lines has been most praiseworthy.

Very respectfully,

EDGAR RUSSEL,
*Captain Volunteers, Signal Officer, Commanding Company E.*

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## APPENDIX No. 12.

## LIST OF MILITARY TELEGRAPH AND TELEPHONE STATIONS IN THE PHILIPPINES, WITH TARIFF RATES ON COMMERCIAL MESSAGES.

### TELEGRAPH STATIONS.

| Town. | Province. | Island. | Town. | Province. | Island. |
|---|---|---|---|---|---|
| Abucay | Bataan | Luzon. | Asingan | Pangasinan | Luzon. |
| Agno | Zambales | Do. | Atimonan | Tayabas | Do. |
| Aguilar | Pangasinan | Do. | Baao | Camarines Sur | Do. |
| Ajui | | Panay. | Baclayon | | Bohol. |
| Alaminos | Zambales | Luzon. | Bacolod | | Negros. |
| Albay | Albay | Do. | Bacolor | Pampanga | Luzon. |
| Alcala | Pangasinan | Do. | Bacoor | Cavite | Do. |
| Aliaga | Nueva Ecija | Do. | Badoc | Ilocos Norte | Do. |
| Alilem | Union | Do. | Bago | | Negros. |
| Angat | Bulacan | Do. | Balanga | Bataan | Luzon. |
| Angeles | Pampanga | Do. | Balayan | Batangas | Do. |
| Antipolo | Morong | Do. | Balincaguin | Zambales | Do. |
| Apalit | Pampanga | Do. | Baliuag | Bulacan | Do. |
| Aparri | Cagayan | Do. | Balungao | Nueva Ecija | Do. |
| Arayat | Pampanga | Do. | Bamban | Tarlac | Do. |
| Argao | | Cebu. | Banate | | Panay. |
| Aringay | Union | Luzon. | Bangued | Abra | Luzon. |

## LIST OF MILITARY TELEGRAPH AND TELEPHONE STATIONS IN THE PHILIPPINES, WITH TARIFF RATES ON COMMERCIAL MESSAGES—Continued.

### TELEGRAPH STATIONS—continued.

| Town. | Province. | Island. |
|---|---|---|
| Bangui | Ilocos Norte | Luzon. |
| Bani | Zambales | Do. |
| Barotac Nuevo | | Panay. |
| Batangas | Batangas | Luzon. |
| Batac | Ilocos Norte | Do. |
| Bauan | Batangas | Do. |
| Bautista | Pangasinan | Do. |
| Bayambang | do | Do. |
| Bayombong | Nueva Viscaya. | Do. |
| Bigaa | Bulacan | Do. |
| Binalbagan | | Negros. |
| Binalonan | Pangasinan | Luzon. |
| Biñan | Laguna | Do. |
| Binangonan | Morong | Do. |
| Binmaley | Pangasinan | Do. |
| Bolinao | Zambales | Do. |
| Bojeador Light-House | Ilocos Norte | Do. |
| Bongabong | Nueva Ecija | Do. |
| Buhi | CamarinesSur | Do. |
| Bulacan | Bulacan | Do. |
| Cabanatuan | Nueva Ecija | Do. |
| Cabangan | Zambales | Do. |
| Cabaruan | Pangasinan | Do. |
| Cabatuan | | Panay. |
| Cabiao | Nueva Ecija | Luzon. |
| Cabugao | Ilocos Sur | Do. |
| Cabuyao | Laguna | Do. |
| Cadiz Nuevo | | Negros. |
| Calaca | Batangas | Luzon. |
| Calamba | Laguna | Do. |
| Calasiao | Pangasinan | Do. |
| Calivo | | Panay. |
| Caloocan | Manila | Luzon. |
| Calulut | Pampanga | Do. |
| Calumpit | Bulacan | Do. |
| Camiling | Tarlac | Do. |
| Camp Stotsenberg | Manila | Do. |
| Candaba | Pampanga | Do. |
| Candelaria | Zambales | Do. |
| Candon | Ilocos Sur | Do. |
| Capas | Tarlac | Do. |
| Capiz | | Panay. |
| Carcar | | Cebu, |
| Carig | Isabela | Luzon. |
| Carigara | | Leyte. |
| Carranglan | Nueva Ecija | Luzon. |
| Castillejos | Zambales | Do. |
| Cavite | Cavite | Do. |
| Cavite Viejo | do | Do. |
| Cebu | | Cebu. |
| Compostela | | Do. |
| Concepción | Tarlac | Luzon. |
| Consolación | | Cebu. |
| Corregidor | | Corregidor. |
| Currimao | Ilocos Norte | Luzon. |
| Cuyapo | Nueva Ecija | Do. |
| Dagupan | Pangasinan | Do. |
| Danao | | Cebu. |
| Dao | | Panay. |
| Das Mariñas | Cavite | Luzon. |
| Dasol | Zambales | Do. |
| Dinalupijan | Bataan | Do. |
| Dingras | Ilocos Norte | Do. |
| Dumanjuc | | Cebu. |
| Dumarao | | Panay. |
| Echague | Isabela | Luzon. |
| Eguia | Zambales | Do. |
| El Deposito | Manila | Do. |
| El Pardo | | Cebu. |
| Escalante | | Negros. |
| Florida Blanca | Pampanga | Luzon. |
| Gapan | Nueva Ecija | Do. |
| Gerona | Tarlac | Do. |
| Guagua | Pampanga | Do. |
| Guiguinto | Bulacan | Do. |
| Guinayangan | Tayabas | Do. |
| Hagonoy | Bulacan | Do. |
| Humingan | Nueva Ecija | Lnzon. |
| Iba | Zambales | Do. |
| Igbarras | | Panay. |
| Ilagan | Isabela | Luzon. |
| Iloilo | | Panay. |
| Imus | Cavite | Luzon. |
| Indang | do | Do. |
| Infanta | Zambales | Do. |
| Iriga | CamarinesSur | Do. |
| Isabela | | Negros. |
| Jaro | | Panay. |
| Do | | Leyte. |
| Jimamaylan | | Negros. |
| La Carlota | | Do. |
| La Castillana | | Do. |
| Lallo | Cagayan | Luzon. |
| La Lomboy (convent) | Bulacan | Do. |
| Laoag | Ilocos Norte | Do. |
| La Paz | Tarlac | Do. |
| Legaspi | Albay | Do. |
| Leon | | Panay. |
| Libmanan | CamarinesSur | Luzon. |
| Lila | | Bohol. |
| Liloan | | Cebu. |
| Lingayen | Pangasinan | Luzon. |
| Lipa | Batangas | Do. |
| Llanahermosa | Bataan | Do. |
| Loon | | Bohol. |
| Los Baños | Laguna | Luzon. |
| Lubao | Pampanga | Do. |
| Lucban | Tayabas | Do. |
| Lucena | do | Do. |
| Mabalacat | Pampanga | Do. |
| Macabebe | do | Do. |
| Magalang | do | Do. |
| Magaldan | Pangasinan | Do. |
| Magdalena | Laguna | Do. |
| Majayjay | do | Do. |
| Malasiqui | Pangasinan | Do. |
| Malabon | Manila | Do. |
| Malolos | Bulacan | Do. |
| Manaoag | Pangasinan | Do. |
| Manapla | | Negros. |
| Mandaue | | Cebu. |
| Mangatarem | Pangasinan | Luzon |
| Manila | Manila | Do. |
| Mariquina | do | Do. |
| Mariquina Road | do | Do. |
| Masinloc | Zambales | Do. |
| Mexico | Pampanga | Do. |
| Meycauayan | Bulacan | Do. |
| Miagao | | Panay. |
| Molo | | Do. |
| Moncada | Tarlac | Luzon. |
| Montalban | Manila | Do. |
| Morong | Morong | Do. |
| Muntinlupa | Manila | Do. |
| Murcia | Tarlac | Do. |
| Naga | | Cebu. |
| Naic | Cavite | Luzon. |
| Namacpacan | Union | Do. |
| Narbacan | Ilocos Sur | Do. |
| Norzagaray | Bulacan | Do. |
| Novaleta | Cavite | Do. |
| Novaliches | Manila | Do. |
| Nueva Caceres | Camarines Sur. | Do. |
| O'Donnell | Tarlac | Do. |
| Orani | Bataan | Do. |
| Orion | do | Do. |
| Ormoc | | Leyte. |
| Pagsanjan | Laguna | Luzon. |
| Palauig | Zambales | Do. |
| Pandan | Ilocos Sur | Do. |
| Paniqui | Tarlac | Do. |
| Pantabangan | Nueva Ecija | Do. |
| Parañaque | Manila | Do. |
| Pasacao | Camarines Sur. | Do. |

## LIST OF MILITARY TELEGRAPH AND TELEPHONE STATIONS IN THE PHILIPPINES, WITH TARIFF RATES ON COMMERCIAL MESSAGES—Continued.

### TELEGRAPH STATIONS—continued.

| Town. | Province. | Island. |
|---|---|---|
| Pasay | Manila | Luzon. |
| Pasay Cavalry Barracks. | do | Do. |
| Pasig | do | Do. |
| Passi | | Panay. |
| Pavia | | Do. |
| Peñaranda | Nueva Ecija | Luzon. |
| Pilar | Bataan | Do. |
| Polo | Bulacan | Do. |
| Porac | Pampanga | Do. |
| Pototan | | Panay. |
| Pozorrubio | Pangasinan | Luzon. |
| Pumping station (Santolan). | Manila | Do. |
| Pura | Tarlac | Do. |
| Quingua | Bulacan | Do. |
| Rosales | Nueva Ecija | Do. |
| Rosario | Cavite | Do. |
| Salasa | Pangasinan | Do. |
| Salomague | Ilocos Sur | Do. |
| Samal | Baatan | Do. |
| San Antonio | Zambales | Do. |
| San Carlos | Pangasinan | Do. |
| Do | | Negros. |
| San Clemente | Tarlac | Luzon. |
| San Enrique | | Negros. |
| San Fabian | Pangasinan | Luzon. |
| San Felipe | Manila | Do. |
| Do | Zambales | Do. |
| San Fernando | Pampanga | Do. |
| Do | Union | Do. |
| San Francisco de Malabon. | Cavite | Do. |
| San Ignacio | Tarlac | Do. |
| San Ildefonso | Bulacan | Do. |
| San Isidro | Nueva Ecija | Do. |
| Do | Zambales | Do. |
| San Jacinto | Pangasinan | Do. |
| San Joaquin | | Panay. |
| San Jose | Batangas | Luzon. |
| Do | Nueva Ecija | Do. |
| San Jose de Buena Vista. | | Panay. |
| San Juan de Guimba | Nueva Ecija | Luzon. |
| San Luis | Pampanga | Do. |
| San Manuel | Pangasinan | Do. |
| San Marcelino | Zambales | Do. |
| San Mateo | Manila | Do. |
| San Miguel | Bulacan | Do. |
| San Narcisco | Zambales | Do. |
| San Nicolas | Pangasinan | Do. |
| San Pablo | Laguna | Do. |
| San Pedro Macati | Manila | Luzon. |
| San Quintin | Abra | Do. |
| Do | Nueva Ecija | Do. |
| San Rafael | Bulacan | Do. |
| Santa Ana | Manila | Do. |
| Do | Pampanga | Do. |
| Santa Barbara | Pangasinan | Do. |
| Do | | Panay. |
| Santa Cruz | Cavite | Luzon. |
| Do | Laguna | Do. |
| Do | Zambales | Do. |
| Santa Maria | Bulacan | Do. |
| Do | Pangasinan | Do. |
| Santa Rita | Pampanga | Do. |
| Santa Rosa | Laguna | Do. |
| Do | Nueva Ecija | Do. |
| Santo Tomas | Batangas | Do. |
| Do | Pampanga | Do. |
| Sara | | Panay. |
| Saravia | | Negros. |
| Sariaya | Tayabas | Luzon. |
| Sexmoan | Pampanga | Do. |
| Sibonga | | Cebu. |
| Silang | Cavite | Luzon. |
| Silay | | Negros. |
| Solano | Nueva Viscaya. | Luzon. |
| Sual | Pangasinan | Do. |
| Subig | Zambales | Do. |
| Sumag | | Negros. |
| Taal | Batangas | Luzon. |
| Tacloban | | Leyte. |
| Tagbilaran | | Bohol. |
| Taguig | Manila | Luzon. |
| Tigbauan | | Panay. |
| Tanauan | Batangas | Luzon. |
| Tanay | Morong | Do. |
| Tarlac | Tarlac | Do. |
| Tayabas | Tayabas | Do. |
| Taytay | Morong | Do. |
| Tayug | Pangasinan | Do. |
| Tiaong | Tayabas | Do. |
| Trinidad | Benguet | Do. |
| Tubigan | | Bohol. |
| Tuguegarao | Cagayan | Luzon. |
| Urbistondo | Pangasinan | Do. |
| Urdaneta | do | Do. |
| Victoria | Tarlac | Do. |
| Victorias | | Negros. |
| Vigan | Ilocos Sur | Luzon. |
| Villasis | Pangasinan | Do. |
| Zapote Bridge | Manila | Do. |

### MANILA LOCAL TELEGRAPH OFFICES.

Central Military Telegraph and Telephone, No. 30 Calle Nozaleda, Ermita.

Captain of Port, Calle Madrid, Binondo.

Headquarters Department of Northern Luzon, No. 384 Calle Gral, Solano.

Governor-General's Residence, No. — Calle Malacañan.

M. & D. R. R. Station, Calle Azcarraga, Tondo.

Ayuntamiento (Palace), Plaza de Palacio, Walled City.

Provost-Marshal-General's Office, No. 98 Calle Palacio, Walled City.

First Reserve Hospital, No. 118 Calle Arroceras.

### MANILA LOCAL TELEGRAPH OFFICES—c't'd.

Observatory, No. 86 Calle P. Faura, Ermita.

Engineer's Office, opposite Malate Church, Malate.

Cable Office, No. 545 Calle Real, Malate.

Headquarters Department of Southern Luzon, No. 417 Calle Nozaleda, Paco.

### MANILA TELEPHONE STATIONS.

Anda street police station (government and city system).

Arsenal.

Army and Navy Club.

Ayuntamiento (palace), (government and city system).

### MANILA TELEPHONE STATIONS—continued.

Bates, General, residence.
Bates, General, staff.
Bilibid prison.
Binondo police station, Anloague street.
Binondo police station, San Fernando street.
Captain of port's office.
Central office city system.
Central office, military telegraph and telephone.
Commissary, chief.
Commissary, depot.
Chief of police (government and city system).
Cuartel de España.
Cuartel de Meisic.
Corral, quartermaster.
Custom-house.
Department of Southern Luzon, headquarters.
Depot, Manila and Dagupan Railroad.
Ermita police station.
Fort Santiago.
Governor-general's residence, Malacañan.
Illumination department, provost-marshal.
Land transportation, quartermaster.
Medical supply depot.
Observatory.
Parian police station, Calle Real.
Police inspector.
Post-office.
Provost-marshal-general's office (government and city system).
Quartermaster, chief.
Quartermaster, depot.
Quiapo police station.
Sampaloc police station.
Santa Ana.
Santa Cruz police station.
Signal Corps shops.
Signal Corps storehouse.
Signal officer, chief.
Tondo police station.
Vaccine hospital.

### ILOILO TELEPHONE OFFICES.

Central office, department headquarters.
Residence of commanding general.
Office of adjutant-general.
Office of chief clerk, adjutant-general.
Office of captain of port.
Provost-marshal.
Cable office.
St. Augustine Barracks.
Palace (hospital and sales commissary).
Brigade hospital.
Hospital storehouse.
Fort and general prison.
Post-office.
Custom-house.
Office of chief paymaster.
Office of chief commissary.
Commissary warehouse.
Signal office and storehouse No. 2.
Office of chief quartermaster.
Warehouse No. 1.
Warehouse No. 2.
Office of depot quartermaster.

### ISLAND OF PANAY LONG-DISTANCE TELEPHONE.

Headquarters, Capiz, and the government landing, Capiz.
Sara and Ajui.
Maasin and Cabatuan.
Igbarras, Guimbal, Tigbauan, and Leon.
Pototan, Barotic Nueva, and Banate.
Calivo and Legatic.

### CITY OF CEBU TELEPHONE OFFICES.

Office of district commander.
Residence of district commander.
Office of post commander.
Residence of post commander.
Hospital.
Signal office.
Office of collector of customs.

### ISLAND OF BOHOL TELEPHONE OFFICES.

Tagbilaran.
Baclayon.

### ISLAND OF LEYTE.

Cable station, Ormoc.
Telegraph, Ormoc to Tacloban.

### TARIFF ON MILITARY LINES.

The following tariff (American currency) will be collected on messages transmitted over military lines in the Philippines:

1. On messages transmitted between points on the same island, 2 cents per word.
2. On messages transmitted between points on different islands, 4 cents per word.
3. Press specials will be charged for at a rate of 1 cent per word between points on the same island, and 2 cents per word between points on different islands.
4. Address and signature to be counted.
5. The minimum charge on any message will be the regular tariff for ten words.

## APPENDIX No. 13.

### REPORTS OF MAJ. JOSEPH MAXFIELD, SIGNAL CORPS, ON CABLE LAYING IN THE PHILIPPINES.

MANILA, P. I., *May 5, 1900.*

SIR: I have the honor to submit the following report of the laying of a cable connecting Cebu and Leyte, and also one connecting Leyte and Samar. This work was performed in obedience to the order contained in letter dated April 7, 1900, and letter of instructions from the chief signal officer, Division of the Pacific and Eighth Army Corps, dated April 8, 1900.

The chartered steamship *Romulus* had been fitted with the necessary machinery for cable laying, and the proper amount of cable to connect the points designated in my orders was on board early on the day of the 10th of April. On account of the difficulties in the navigation in the Pasig River, however, the ship could not sail until late in the afternoon. At 5.30 p. m. on the 10th of April the *Romulus* sailed for Cebu, arriving at 1.50 p. m. on the 12th. The arrival was reported immediately to the commanding officer of that island and inquiries made as to the nature of the landing places possible for cable from Cebu on the south to Danoa on the north.

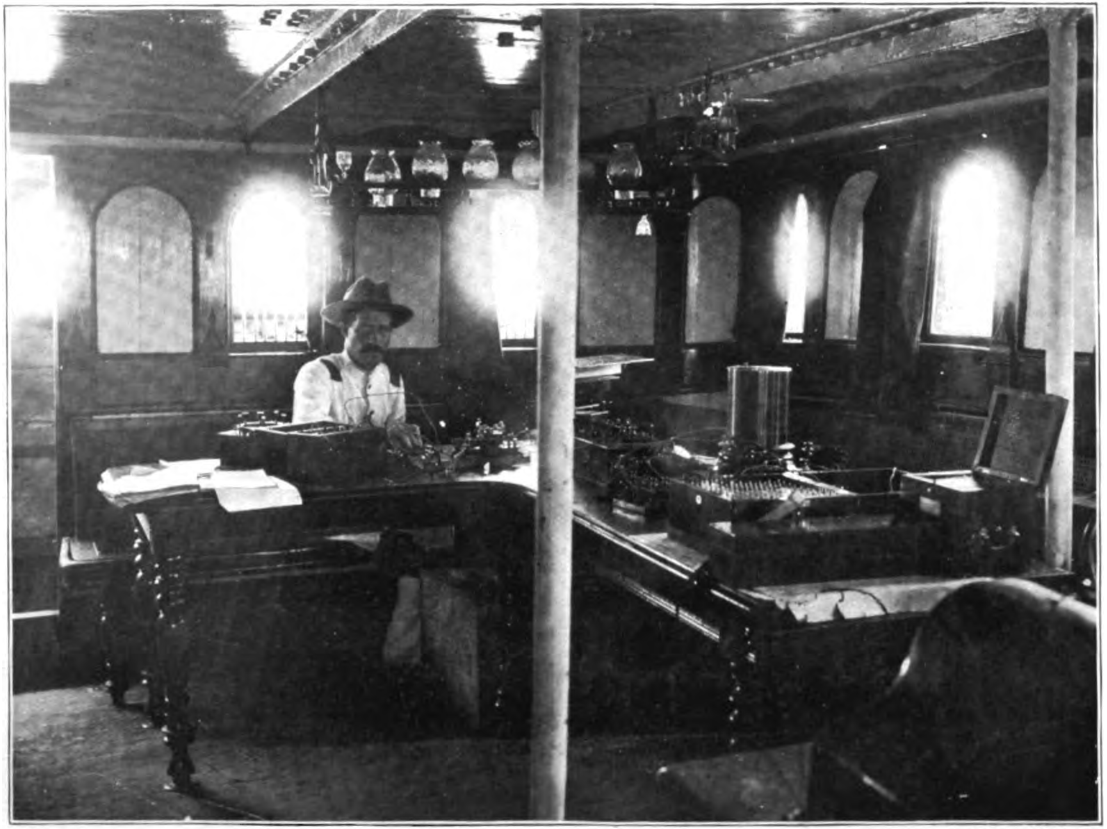
After consideration of the information received and a study of the charts of these waters, it was decided that Liloan, about 13 miles north of Cebu, was the most suitable point for the landing of cable.

It being known that at least one point not garrisoned would be visited by the expedition, the services of a small guard to protect the landing was requested of the commanding officer of Cebu, as well as the services of a number of the Hospital Corps, several of the native laborers having shown themselves to be ill. These were most kindly furnished, and reported on board on the morning of the 15th upon the return of the *Romulus* to Cebu, after having made the necessary soundings and surveys at that point.

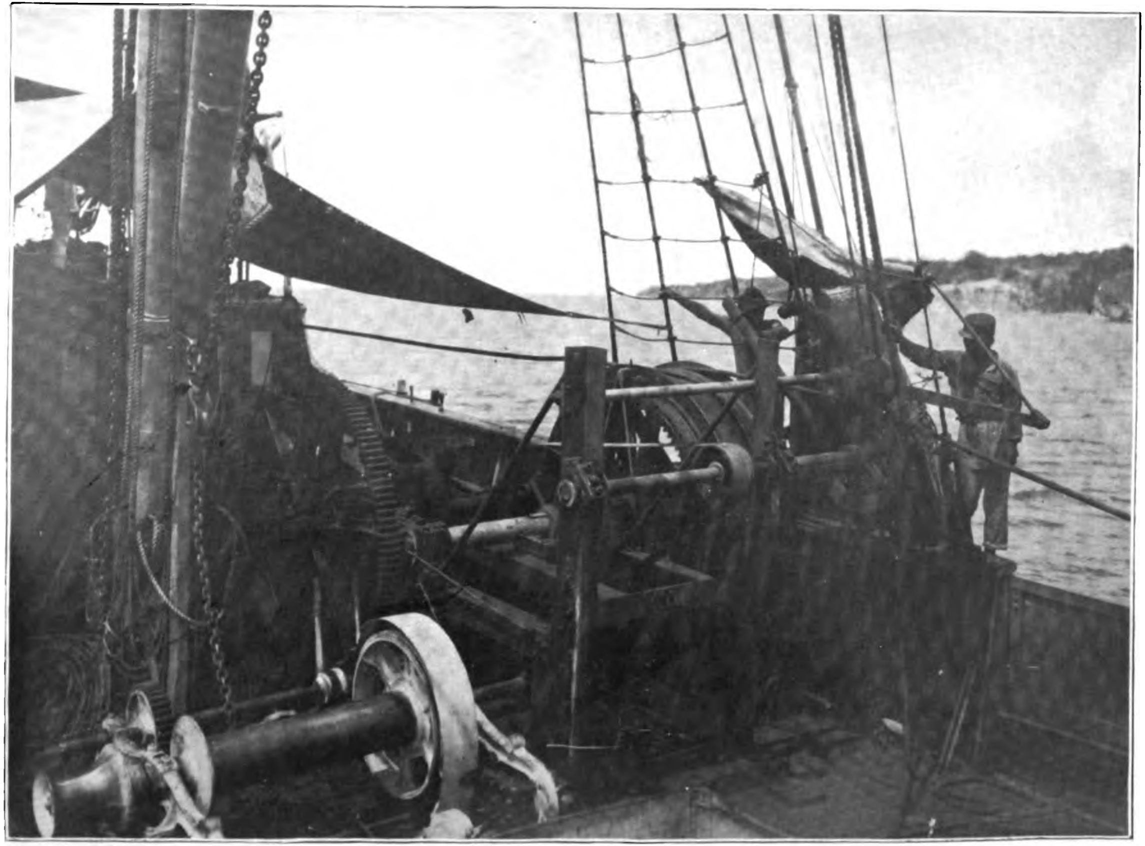
At 7 a. m. on the 13th the *Romulus* left for Liloan, arriving at 8.30 a. m. The day was spent in making soundings from small boats of the approaches to Liloan and determining the latitude and longitude of the point where the cable was to be landed. On the 14th the soundings were continued, as those made on the previous day showed there were dangerous sand bars extending some distance from the coast. Two mark buoys were placed to enable the ship to approach as close to shore as possible when the shore end of the cable should be landed. The ship then left for Cebu, where it anchored for the night. Early the next morning, the guard and medical attendant having been taken on board, the *Romulus* sailed for Liloan, where it arrived at 9.55 a. m. The course was immediately laid for a point just north of the Camorrotes Islands on the most direct line to the town of Ormoc, on the island of Leyte. Soundings were taken after passing over each 5 miles of the distance between Liloan and Ormoc. These soundings were considered necessary to enable proper economy in the expenditure of cable to be laid. The cable was therefore laid from Ormoc to Liloan.

Ormoc was reached at 6.15 p. m., where the ship anchored for the night. The soundings showed that the charts available were most unreliable. The water deepened very rapidly upon the departure from Liloan, being 121 fathoms deep 5 miles distant from that point, 330 fathoms deep 10 miles distant, and 376 fathoms deep at 15 miles. From this point the soundings vary but little, averaging about 160 fathoms until quite close to the shore at Ormoc. At 6 o'clock the next morning the landing of the signal supplies, which were to be left at Ormoc, consisting of material for the construction of 100 miles of land line, was begun. This material had to be landed in small boats and carried a considerable distance from the landing place to the storehouse. In doing this work the most effective assistance was rendered by the commanding officer at Ormoc. During the same time this material was being stored the work of landing the shore end of the cable, carrying it to the building selected as a telegraph office, and properly burying the portion on shore was carried on. The cable itself was led directly into the office, which is in the second story of a building situated about 150 yards from the landing place. The cable was buried to a point immediately below the window of the office and carried up the side of the building, the armor wires and jute covering being cut off at the window sill. From this point the conductor of the cable was carried directly to the instrument without the use of office wire. The above work was completed about dark, and, after making a test of the cable already laid and that in the main and after tanks, to which it was joined, work was stopped for the night.

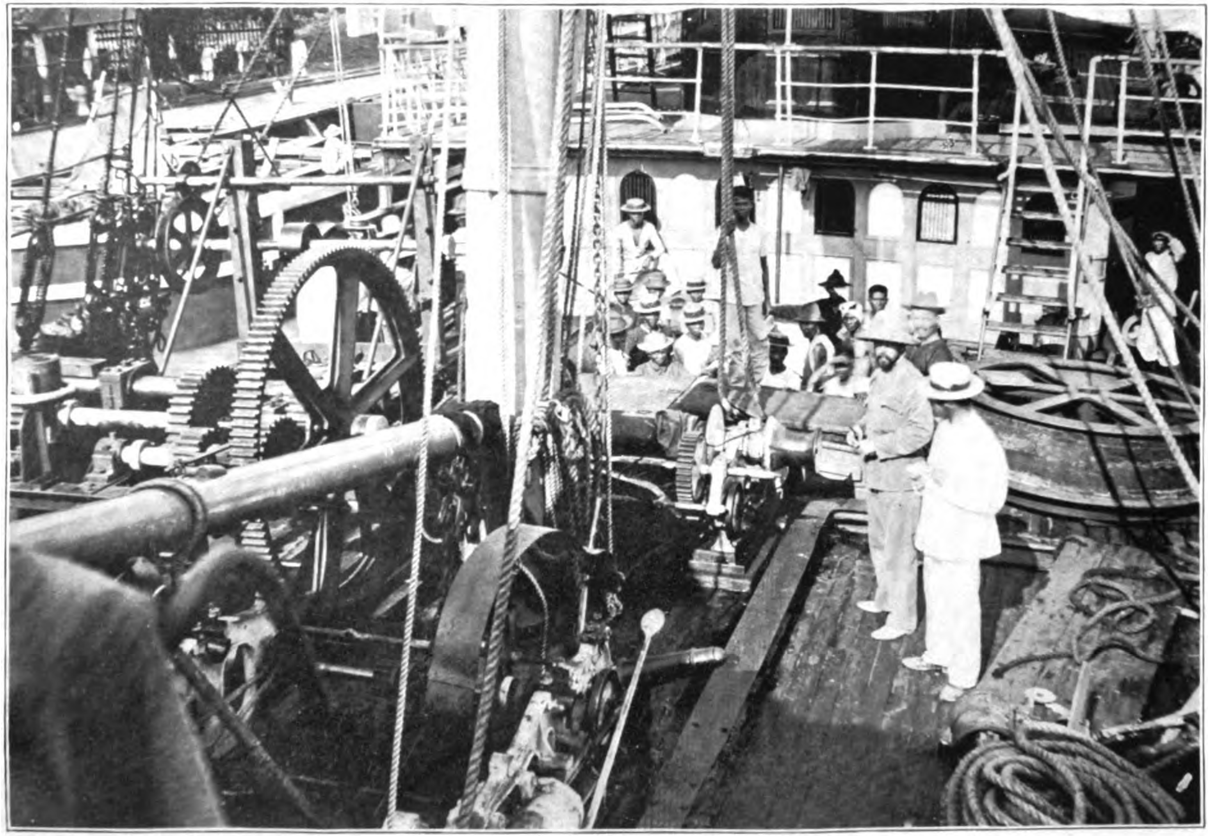
On the 17th, at 5 a. m., the test of the previous night having shown the cable to be in a satisfactory condition, the anchor was raised preparatory to paying out toward Liloan. It was found that owing to a change in the wind during the night



TESTING ROOM ON CABLE SHIP ROMULUS, CORREGIDOR ISLAND, P. I.



LAYING CABLE NEAR CORREGIDOR ISLAND, MANILA BAY, P. I.



EQUIPPING CABLE SHIP ROMULUS, MANILA, P. I.

and varying currents the anchor of the ship had become foul with the cable. This was cleared at 5.30 a. m., and paying out of the cable toward Liloan was begun. Everything progressed satisfactorily until 10.45 a. m., the average rate of speed being about 4 knots per hour. During the period of paying out constant communication was kept up with the shore and tests made of the cable payed out. At 10.40 a. m. communication was found interrupted. An electrical test was immediately made, which showed the presence of a very bad escape on the line. At 11.30 a. m. the ship began picking up the cable laid, this cable being coiled into an empty space in the fore hold. After picking up 1½ miles communication was restored. The damaged part having been cut out, the remaining cable in the tank was spliced to that already laid, and paying out was resumed at 3.30 p. m. Shortly after 4 p. m. communication was again interrupted and the picking up of cable laid was resumed. About three-quarters of a mile was picked up, when communication again being established, the defective cable cut out, and a test of the cable laid showing it to be in a satisfactory condition, it was again spliced to the cable on board and paying out resumed at 8.20 p. m. This was continued until 1.56 a. m. of the 18th at about the same rate as before, 4 knots per hour. At this hour communication became uncertain, indicating the presence of an escape on the line. Tests were made of the cable laid until at 3 o'clock in the morning it was found there was a complete ground between the ship and the shore end of the cable. Sufficient cable was picked up to insure that any slack that might have gone overboard during the time stops had been made for the tests had been taken in, and the work stopped to enable proper rest to be given to the working force. At 5.50 a. m. on the 18th work of picking up the cable toward Ormoc was resumed. At 6.10 a. m. the cable was cut and tests made of that part already laid. These showed the cable to be in a satisfactory condition, and the part picked up having been cut out, the Ormoc end of the cable was again spliced to that in the tanks. Paying out toward Liloan was again resumed, and was continued until 3 p. m. without interruption, at which time the *Romulus* anchored off Liloan. The cable was immediately stoppered and enough cable to reach the shore coiled from the forward hold upon the forecastle deck. The cable was then cut and test made of that part upon the deck, together with that reaching to Ormoc. This being satisfactory, the cable upon the forecastle deck was coiled into two boats and landed upon the shore directly opposite the building occupied as post headquarters. This was effected at 5 p. m. Tests were again made from shore which showed that the cable laid was in good condition from the island of Cebu to that of Leyte. Work was then stopped for the night. At 6.30 the next morning, the 19th, the cable party landed at Liloan and buried the cable from a point slightly below high-water mark to a point immediately below the window of the telegraph office. An additional instrument was placed in this office and communication established with Ormoc. The final test of the cable showed it to have an insulation resistance of about 200 megohms per mile. This work was completed at 9.22 a. m., after which the mark buoys were picked up, hoisted on board, and at 12.40 p. m. the *Romulus* sailed for Tacloban to lay the cable between the islands of Leyte and Samar. Tacloban was reached on the morning of the 20th. The beaches at Tacloban and on the coast of Samar, opposite, were examined, and suitable points for the landing of the cable selected. The laying was postponed until the following morning in order to secure freedom from interference from the tide.

At 7 a. m., the 21st, anchor was raised and the shore end landed at Tacloban, a short distance from headquarters. Cable was then payed out to the opposite coast of Samar, a distance of about 1¼ miles. After landing the shore end and properly burying it, the ship proceeded back to Tacloban, where the other end was likewise secured and protected. Tests showed the cable to be in good condition, after which the ends were sealed. Instruments for the establishment of two offices were left with the commanding officer at Tacloban. At 3 p. m. departure was taken for Liloan, which point was reached at 7 a. m. the 22d. A boat was sent to make the necessary soundings and surveys preparatory to laying a cable loop from Liloan to the city of Cebu. At the same time the shore end of this cable loop was landed at Liloan and by means of lead-covered cable carried to the telegraph office. Tests were again made of the Ormoc-Liloan cable, showing it to be in excellent condition. At 1.40 p. m. the laying of the loop to Cebu began and was continued until 3.45 p. m., at which time all the cable on board except the defective cable previously picked up was exhausted. This had been overhauled and partly repaired during the previous days. Such repairs were continued, and enough cable secured to enable the loop to be landed at a point a little over 1 mile north of the telegraph office in the city of Cebu. Work was begun at 5.30 a. m. on the 24th in landing the shore end. This was completed at 9 o'clock, after which the ship left for its anchorage off the city of Cebu. The signal officer at that point was informed of the exact location of the cable, and material left with him for the construction of a land line from that point to the telegraph office. At half past 4 in the afternoon the ship sailed for Manila, where it arrived early on the morning of the 27th. A short stop was made en route at Iloilo, and a verbal report made to the brigadier-general commanding the District of the Visayas of the work performed.

It was found that the sea bottom upon which the cable rests was as a rule muddy, although near the shore at Liloan it was formed largely of coral rock. The beaches at Cebu and Ormoc were both sandy.

The working force upon this expenditure consisted of Messrs. Otto Strubel and Henry Winter, cable engineers; First-Class Sergt. John Kennedy, and Clifford De Kast, Signal Corps, U. S. A.; Sergt. A. C. Blair, Signal Corps, U. S. A., and 30 native laborers. All performed their work with zeal and intelligence. The success of the work was largely due to the knowledge and skill of Messrs. Strubel and Winter.

The medical attendant and guard were returned to their commands at Cebu.

Very respectfully, your obedient servant,

J. E. Maxfield,
*Major, Signal Officer, United States Volunteers, in charge Cable Expedition.*

The Chief Signal Officer United States Army.
(Through Signal Officer, Department of Pacific.)

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## Report of Maj. J. E. Maxfield on Laying of the Pasacao–Guinayangan and the Naic–Corregidor Cables.

October 23, 1900.

Sir: I have the honor to report the successful laying of submarine cables between Pasacao and Guinayangan, on the coast of southern Luzon, and between the island of Corregidor and the town of Naic, in Manila Bay, in accordance with instructions contained in letters from the adjutant-general, Division of the Philippines, dated May 10, 1900, and May 31, 1900, respectively.

Immediately upon the return of the chartered steamer *Romulus*, which had been fitted, as previously reported, with the necessary machinery for submarine cable laying, the work of joining up and coiling on board the remainder of the cable recovered from the wreck of the transport *Hooker* was begun. This work was completed on May 9, the total amount of cable on board on that date being about 70 miles. On May 10 the *Romulus* sailed from Manila for Pasacao. A landing was made on the 11th at Lucana for the purpose of unloading signal corps supplies which had been received for shipment to that point. Pasacao was reached at 4.40 a. m. on May 12, and the work of landing the shore end of the cable immediately begun. This work was completed and telegraphic communication between the ship and the Pasacao office established at 9.40 a. m. The cable was buried from low-water mark to the office building, the cable being led directly up the side of the building to the instruments without the use of office wire. At 11.40 a. m. the anchor was lifted and the paying out of cable commenced. This was continued until 6 p. m., when the ship was brought to anchor after paying out 17 miles of cable. Work was resumed at 5 a. m. the next morning and continued until noon, at which time a point 4 miles off Guinayangan had been reached. Here the end of the cable was sealed and buoyed, in accordance with instructions from the Chief Signal Officer, Guinayangan not yet being occupied by our troops. The ship immediately departed for Manila, touching at Lucena on the way, and anchored in Manila Bay at 1 o'clock on the morning of May 15. At 7 in the morning the ship proceeded to her berth in the River Pasig, and the taking on of commissary stores and equipments for the use of the future garrison at Guinayangan was begun. This work was completed on May 17, and on the next day the ship proceeded to Lucana, arriving at that point at 4 a. m. on the 19th. Here a company of infantry which was to constitute the garrison at Guinayangan, was taken on board, and as soon as their effects had been embarked the *Romulus* left for Guinayangan. In order not to approach that point during the night, and at the request of the officer commanding the troops, the ship was anchored during the night of the 20th off Point Bagutayok. At 5 o'clock on the morning of the 21st the anchor was raised and the ship proceeded to Guinayangan, anchoring at 6.15 a. m., in 2½ fathoms of water, off that place. At 7.30 a. m. the troops had all disembarked and occupied the town without opposition. The remainder of the day was consumed in discharging the commissary stores and other effects belonging to the garrison. Early next morning the shore end was landed at Guinayangan, and a telegraph office established at that point. At 11.30 the burying of the shore end had been completed and the boats hoisted in, and the *Romulus* commenced paying out cable toward the buoy, which had been placed on the previous visit. At 1.35 p. m. the buoy was reached, and the final splice made and put overboard. The tests made before splicing having shown that a fault had developed between this point and Pasacao, the *Romulus* immediately set out for the latter place, arriving at 8 p. m. On May 23 tests were made at Pasacao to locate the fault, with the result that it was found probable that several faults existed in the cable, of which at least one was very near Pasacao. The work of underrunning the cable was therefore begun at the Pasacao end, and continued until the night of the 25th. During this time several faults were cut out, which appeared to be due to rough handling which the cable had received during its recovery from the wreck of the *Hooker*. On May 26, provisions on board having run short, the ship left for the island of Burias, where fresh meat and fowl were obtained. Work of repair was resumed on the afternoon of the same date and continued until the evening of the 27th, when, all faults having been removed and the tests having shown the cable to be in good condition, the final joint and splice was made, after which the ship returned to Pasacao. Early on the morning of the 28th of May the ship proceeded to Manila, where it arrived 7.20 p. m. May 29. The total amount of cable laid between Pasacao and Guinayangan was 50 miles. The greatest depth found during the course of this work was about 250 fathoms, near Point Buri.

The latitude and longitude of ten points along the course of the cable was determined, as follows:

| *Latitude north.* | | | *Longitude east.* | | |
|---|---|---|---|---|---|
| ° | ′ | ″ | ° | ′ | ″ |
| 13 | 23 | — | 123 | 3 | 5 |
| 13 | 28 | 55 | 123 | 2 | 45 |
| 13 | 34 | 30 | 122 | 56 | 15 |
| 13 | 28 | 20 | 122 | 51 | 25 |
| 13 | 43 | 45 | 122 | 46 | 40 |
| 13 | 51 | 15 | 122 | 42 | 10 |
| 13 | 52 | 45 | 122 | 30 | 40 |
| 13 | 53 | 35 | 122 | 27 | 40 |
| 13 | 53 | 30 | 122 | 26 | 45 |

Three days were spent at Manila in the splicing up of cable remaining on hand and the loading of a sufficient amount on board to connect Corregidor and Naic. On the morning of June 1 the *Romulus* left for Corregidor, where a telegraph office was established, the shore end landed, and cable laid to a point within 2 miles of Naic. Here the water was found to be very shallow, preventing a nearer approach to the shore. After several attempts to approach nearer, during which the ship went aground, work was stopped for the night. Early the next morning a signal party with sufficient material for the erection of a land line from the beach to the town of Naic was landed. Two miles of cable which formed the shore end was coiled in five boats and landed On account of the high wind and long distance to be traversed between ship and shore, this work was not completed at nightfall. At 6 in the morning of the 3d work was resumed, and the landing and burying of the shore end was completed during the forenoon, after which departure was made for Corregidor Island. Here, during the afternoon of the 3d and the morning of the 4th, the shore end at Corregidor was more firmly secured and buried, and tests made as to the condition of the cable. These proving satisfactory, the *Romulus* proceeded to Manila, touching at Naic, to bring back the signal party left there. The total length of the Corregidor-Naic cable is 17 miles.

As has been previously reported, the cable used for both the Pasacao-Guinayangan and Corregidor-Naic cables was obtained by splicing together a very large number of short lengths. There was hardly a mile of either of these cables which did not contain several splices. It was also found that in that portion of the cable which had been coiled overboard from the wrecked *Hooker* for the purpose of lightening the ship, and which had afterwards been recovered, many faults existed, caused by the severe strain which this portion of the cable had undergone during its recovery. These oftentimes were not apparent until the cable was actually in the water. As no facilities were to be had in Manila for the testing of this cable in water before starting out, considerable delay was experienced in the completion of this work, particularly in the case of the Pasacao-Guinayangan cable.

In view of the treatment which this cable had received during its recovery from the wreck of the *Hooker* and the long exposure to the intense tropical heat which it had experienced after recovery owing to the lack of proper facilities for caring for it at Manila, it is a matter of congratulation, both to the service and to the manufacturers of the cable, that favorable results should have been obtained.

Maps showing the location of these two cables, together with the depth of water at various points along their course, are inclosed.

Very respectfully,

J. E. MAXFIELD,
*Major, Signal Corps, United States Volunteers.*

THE CHIEF SIGNAL OFFICER DIVISION OF THE PHILIPPINES,
*Manila, P. I.*

# APPENDIX No. 14.

## REPORT OF CAPT. EUGENE O. FECHET ON THE DISBURSEMENT OF SIGNAL CORPS APPROPRIATIONS AND ALLOTMENTS.

WAR DEPARTMENT, SIGNAL OFFICE,
*Washington, D. C., October 1, 1900.*

SIR: I have the honor to submit the following report for the period of July 1, 1899, to June 30, 1900, in which is embraced mention of the outfitting of the United States cable ship *Burnside*, which has been completed since the latter date.

### CHARACTER OF WORK.

The ordinary routine work of the disbursing division consists in the preparation of the estimates for appropriations; the purchasing, under bids and specifications, of signal equipment; invoicing, packing, and shipping the same; the preparation of money accounts and property returns, etc.

### PERSONNEL.

I have been continuously on duty as purchasing and disbursing officer, both of the Regular and Volunteer Signal Corps of the Army, to present date.

The clerical force of the disbursing division has been as follows: One principal clerk, one money accounts clerk, two stenographers and typewriters one invoice clerk, one property accounts clerk, and one clerk examining and checking telegraph cable accounts. This force is at present just barely able to carry forward the daily current work and not allow any arrears of work to accumulate.

Owing to the enormous increase in the volume of work in this division, beginning with the inception of the Spanish war, the purchase of equipment having increased nearly fifteen-fold, it was found absolutely necessary to establish a complete file system, separate and independent of the office files kept by the chief clerk of the Signal Office. This involved much arduous, painstaking labor, guided by a high order of clerical intelligence. This work has been most successfully accomplished by the principal clerk, and all records and correspondence are now cross indexed up to date.

While all of this clerical force, save the money accounts clerk, are on the temporary roll, all but two have served continuously over one year and one over two years. As a natural result of selection, transfer, and discharge, the present clerical force is highly efficient and has earned, by faithful service, the reward of having their temporary tenures made permanent.

### GENERAL SUPPLY DEPOT.

A general supply depot has been maintained in Washington in a building the rental of which has been paid from the regular Signal Corps appropriation. There have been employed in this depot one inspector and storekeeper and two packers, continuously, with additional help temporarily employed, as the occasion demanded.

Owing to the limited capacity of the supply depot it has been necessary to store much signal equipment, held for issue, at the Signal Corps post of Fort Myer, Va. With better shipping facilities at Rosslyn, the railway station for Fort Myer, it is believed that it will be found desirable to store the greater bulk of the reserve supplies of the Signal Corps at Fort Myer, Va.

### SUBSUPPLY DEPOTS.

At Governors Island, New York Harbor, and at San Francisco, Cal., supply depots are maintained. At both of these points it has been the policy to carry sufficient supplies to meet all ordinary and urgent demands of the Regular Army posts in the departments of the East and of California.

At San Francisco, in addition to the maintenance of a depot sufficient to meet demands within the Department of California, it has been the endeavor to carry sufficient signal and electrical equipment to meet "hurry" requisitions by cable from the Philippines.

On account of the very limited storage room available, both at Governors Island and at San Francisco, it has been impossible to fully utilize all the advantages of completely equipped supply depots at these important distributing points.

In addition to his duties as signal officer, Department of the East, Capt. Samuel Reber, United States Signal Corps, has had charge of the supply depot at Governors Island, and also has been charged with the inspection of equipment purchased for delivery in New York.

Similar duties of purchasing, inspection, and shipping supplies have been performed at San Francisco by Maj. Frank Greene, United States Volunteer Signal Corps, and by Capt. A. B. Dyer, Sixth United States Artillery, signal officers, Department of California.

### PURCHASE AND INSPECTION OF SUPPLIES.

During the past year, the second since the Signal Corps has been charged with duties beyond the limits of the United States, a greater familiarity with the new condition to be met has enabled the signal officers in the Philippines, Cuba, and Porto Rico to make requisitions for supplies best suited to accomplish the objects required. Climatic and other conditions, widely differing from those in the United States, have required changes and modifications in the equipment that had become standard in the United States.

As far as possible, all purchases by this division have been by awards under bids, but in many instances quick calls for supplies have come by cable, and the need to make shipment by transport sailing within a few days has obliged purchases to be made in open market. But in such emergency cases requests for prices, either by letter or by telegraph, have been sent to a number of leading firms or companies, thus securing competition.

The wide diversity in the supplies purchased, ranging from the simple flag and staff to complex electrical instruments and from galvanized-iron wire to deep-sea cable, has made the inspection of equipment a most important duty. This inspection implies a high degree of professional and technical knowledge, joined to a practical familiarity with the details of manufacture and construction. The largest share of this important work of inspection has been performed by Capt. Samuel Reber, United States Signal Corps, aided by one civilian employee, Mr. Townsend Wolcott, a trained electrical engineer.

### ALASKA.

The regular appropriation for the support of the Army became a law May 26, 1900. This bill carried an item of $450,550 for the construction, operation, and maintenance of military telegraph and cable lines in Alaska. This amount became immediately available upon the bill becoming a law.

The disbursing division received its first credit under this appropriation on June 8, 1900. Owing to the shortness of the open season in Alaska, hardly a beginning could have been made this season upon this most important work had the Chief Signal Officer not been ready the moment the Alaskan money became available to at once place orders for all of the equipment requiring time for making. That this could be done was due to the wise foresight of the Chief Signal Officer in causing advertisements for proposals for this equipment to be sent out early in April. Awards were made contingent upon the appropriation being made. This equipment composed iron poles, telegraph wire, deep-sea cable, cable equipment, cable, huts, dynamos, and prime movers, land cable, and land equipment. In addition to this large equipment a great amount of supplies had to be purchased, inspected, packed, and shipped from the Atlantic seaboard to Seattle and San Francisco for shipment to Alaska.

From point of shipment to ultimate destination this equipment had to be transported about 7,000 miles, on the average, and with the Alaskan season opening in June and closing about October 1, the task of getting all supplies to their destination was not a light one. Happily, this was accomplished, as the last steamer from Seattle, October 2, carried north the last batch of stores.

Realizing the distant and isolated position of the new territory to be traversed by land lines, and the remoteness, necessarily, of the stations from each other, great care was taken to have each station equipped generously and completely. A station list was prepared, embracing everything but wire and poles necessary for the installation and operation of a telegraph station. The supplies for one station were carefully packed in five well-made chests provided with padlocks, consecutively numbered from 1 to 5. Twelve lots of these sets of five chests were sent to Alaska, thus enabling a telegraph station to be opened the moment the wire is strung.

### PHILIPPINES.

The demand for supplies for the Philippines has been continued, and as the pacification of these islands further progresses it is reasonable to anticipate a contiuued demand for signal equipment, since our lines of telegraphic communication move and grow with the area of territory brought under peaceful conditions.

The wisdom of keeping at Manila a general depot of signal equipment of every kind has been repeatedly demonstrated, notably in the recent trouble in China. Our signal depot at Manila was able to meet all calls, due to the operation of the United States forces in China.

### CUBA AND PORTO RICO.

Supply depots have been maintained at Havana, Cuba, and at San Juan, P. R.

### PARIS EXPOSITION EXHIBIT.

By direction of the Chief Signal Officer, there was shipped to Lieut. H. A. Poundstone, U. S. N., naval attaché at the Paris Exposition, a complete set of apparatus illustrative of all modes of signaling, visual and electrical. This collection included flags of various sizes, staffs, heliographs, telescopes, telegraph (type D) kits, portable telephone (type E), signal lanterns, reels for wire, practice kits and glasses.

### SIGNAL EQUIPMENT SENT INDIAN GOVERNMENT.

At the request of the Indian Government, through the English ambassador at this point, a complete set of signal equipment was furnished that Government. This equipment consisted of a representative or type of each of the various methods of signaling at present in use in the Signal Corps.

The request for such signal equipment was, in itself, a recognition that the art of military signaling had reached its highest development in the United States.

### UNITED STATES CABLE SHIP BURNSIDE.

The United States cable ship *Hooker* having been lost in Manila Harbor, while en route to Hongkong for a supply of coal, it became necessary to procure another cable ship. This has been accomplished by taking the Government transport *Burnside* and fitting her up for cable operations.

The greater part of this work of refitting the *Burnside* was done by the Quartermaster's Department. The cable tanks, with a total capacity of over 500 miles of cable, have been constructed and placed in position on the *Burnside* by the Signal Corps.

The fitting up of this ship is now completed, and she has sailed for her destination

The technical equipment proper of the *Burnside* for the work of laying cable is very complete, and much care was exercised in the procurement of the technical instruments required for all details of cable operations.

In addition to this special equipment, advantage was taken to ship to Manila a large amount of supplies for the Signal Corps supply depot at Manila.

To more fully exhibit the operations of the disbursing division, statements are submitted of receipts and disbursements of Government funds, and also the chief articles of signal equipment issued during the year.

*General statement of money account from July 1, 1899, to June 30, 1900.*

| Title of appropriation. | Cash on hand July 1, 1899. | Receipts. | Total. | Disbursements. | Cash on hand June 30, 1900. |
|---|---|---|---|---|---|
| National defense | $0.08 | $378.25 | $378.33 | $378.33 | |
| Signal Service of the Army, Jan. 1, 1899 | 2,544.94 | | 2,544.94 | 2,544.94 | |
| Signal Service of the Army, 1899 | 2,284.88 | 723.43 | 3,008.31 | 3,008.31 | |
| Signal Service of the Army, 1900 | | 231,093.63 | 231,093.63 | 218.282.56 | $12,811.07 |
| Military telegraph and cable lines, 1899 | 13,004.95 | 2,865.21 | 15,870.16 | 14,690.77 | 1,179.39 |
| Military telegraph and cable lines, Alaska, 1900–1901 | | 450,550.00 | 450,550.00 | 23,809.80 | 426,740.20 |
| Emergency fund, act March 3, 1899 | | 283,080.00 | 283,080.00 | 44,399.38 | 238,680.62 |
| Total | 17,834.85 | 968,690.52 | 986,690.52 | 307,114.09 | 679,411.28 |

*Disbursements.*

| | |
|---|---|
| Maintenance, operation, and rental of cables | $49,212.81 |
| Telegraph and telephone lines, instruments, batteries, supplies, etc | 177,047.08 |
| Heliographs, kites, lanterns, and other visual signaling | 9,933.15 |
| Field glasses and telescopes | 8,388.37 |
| Lance trucks, battery wagons, wire wagons, etc | 11,146.90 |
| War balloons and expenses in connection therewith | 155.75 |
| Electrical installation at posts of fire-control systems, etc | 589.37 |
| Miscellaneous (company outfits, stationery, furniture, photographic material, etc.) | 36,751.77 |
| Civilian operators for the year and rental of telegraph stations | 13,888.89 |
| Total | 307,114.09 |

*Statement of principal articles of signal equipment issued to signal officers, with destination thereof, during the year ending June 30, 1900.*

| | Cuba. | Porto Rico. | Philippine Islands. | Alaska. | Regular United States posts. | Total. |
|---|---|---|---|---|---|---|
| *Wire.* | | | | | | |
| No. 9 galvanized iron..............miles.. | 100 | 100 | 2,050 | 400 | 69 | 2,719 |
| No. 14 galvanized iron..............do... | | | 1,990 | | 67 | 2,057 |
| Seven-ply naked..............do... | | | 381 | | 74 | 455 |
| Seven-ply insulated..............do... | | | 133 | | 25 | 158 |
| No. 14 copper..............do... | | | 78 | | | 78 |
| No. 22 copper..............do... | | | 100 | | | 100 |
| Steel telegraph..............do... | | | | 500 | 100 | 600 |
| *Cable.* | | | | | | |
| Copper, armored..............miles.. | | | 100 | | | 100 |
| Deep sea..............do... | | | 190 | | | 190 |
| Shore end..............do... | | | 12 | | | 12 |
| Bluestone..............pounds.. | | 4,000 | 19,499 | 1,000 | 4,679 | 29,178 |
| Telephones | 17 | 43 | 392 | | 69 | 521 |
| Telescopes | 29 | | 14 | | 21 | 64 |
| Typewriters | | | 58 | | 16 | 74 |
| Keys, telegraph | | 10 | 330 | | 76 | 416 |
| Relays, telegraph | | 20 | 284 | | 39 | 343 |
| Sounders, telegraph | | | 140 | | 70 | 210 |
| Poles, telegraph | | | | 4,000 | 500 | 4,500 |

The estimate of the clerical force required in the disbursing branch of the Chief Signal Office for the coming fiscal year is respectfully sumbitted:

| | |
|---|---|
| One principal clerk | $1,600 |
| One money accounts clerk | 1,400 |
| Two clerks, who are also stenographers and typewriters, $1,200 | 2,400 |
| Two clerks, $1,000 (one property returns clerk; one invoice clerk) | 2,000 |
| Total | 7,400 |

This estimate provides for but two skilled accountants, viz, the money accounts clerk and the property returns clerk.

Two stenographers and typewriters are needed to meet the requirements of the vastly increased correspondence of this division. As typewriters, these two clerks prepare all bids and specifications for the purchase under contract. The invoice clerk prepares all invoices and assists the property returns clerk.

Under the above estimate the total cost of the administration of the disbursing office for the fiscal year ending June 30, 1902, is but $7,400, and it is not believed that any reduction can be made without seriously crippling the efficiency of this office.

In conclusion, I desire to earnestly bear testimony to the efficiency, intelligence, and loyalty to their work manifested at all times throughout the year by the clerical force under my charge.

These clerks are all on the temporary roll of the War Department, and by faithful work have earned some recognition. It is hoped that their transfers to the permanent rolls may be made.

Very respectfully,

EUGENE O. FECHÉT.
*Captain and Signal Officer, United States Volunteer Disbursing Officer.*

The CHIEF SIGNAL OFFICER UNITED STATES ARMY,
*Washington, D. C.*

## APPENDIX No. 15.

### EXTRACT FROM REPORT OF CORPL. J. D. SAULSBURY, COMPANY E, SIGNAL CORPS, U. S. A., RELATIVE TO HIS CAPTURE BY INSURGENTS AND SUBSEQUENT RELEASE.

I left Manila October 17 with a Signal Corps party under command of Captain Russel, proceeding by way of San Fernando de Pampanga, Mexico, and Santa Ana, arriving at Arayat about noon October 18. I learned that our forces were then fighting near Cabiao and in order to obtain, if possible, pictures of this work, I had permission from Captain Russel to push on with D troop of the Third Cavalry, which was then leaving Arayat. We reached Cabiao at about 6 o'clock and camped for the night. I was joined here by my assistant, L. S. Smith, who had been with Lowe's scouts. Next morning, October 19, we joined the advance upon San Isidro. The day being rainy, our work was very difficult and finally our material became so saturated as to render further progress impossible. As there were no signs of insurgents in that vicinity (everything being ahead of our line) we took refuge in a native hut, which stood close to the road, intending to dry our material and if possible wait until the weather cleared. As troops had just passed over this road, and supply trains and hospital carts with guards were passing from time to time, this was considered safe. However, about an hour later we were fired upon by a party of insurgents at such short range as to make it impossible for two men armed only with revolvers to do other than retreat. Our property being spread out to dry, we were unable to collect all of it in our packs but left it there, hoping to be able to return later and reclaim it. Keeping under cover as much as possible we managed to reach San Isidro (which had then been taken) in safety. As soon as more troops reached San Isidro I endeavored to learn of them if they had seen our property, and if there were still any natives in the vicinity. As several (guards of the Thirty-seventh Infantry supply train, and several men of the Fourth Cavalry, but of what troop I am unable to recall) had seen the property, and reported that it was still there, but had seen no natives, I started back to recover it if possible. When within about 100 yards of the hut I was again fired upon and my horse killed. I then returned to San Isidro, where I camped with the Thirty-seventh Infantry. In the morning I started again with my assistant, resolved to regain our outfit, or if that was impossible, to return to Arayat and report to Captain Russel. When we reached the hut (which we did in safety we found that the property had been removed, so we hurried on, passing Cabiao about noon. All went well until we reached a small barrio, about half way between Cabaio and Arayat, where we were attacked by a large body of Filipinos, who drove us off the road toward the river. At the river, however, we met two gunboats towing cascos, in one of which I saw General Lawton, who, upon my reporting to him the attack which we had received, told us that from there to Arayat either the road or the river was clear, and that I could proceed by either route. As he had just come up the river, I took that as the best course, and embarking in a small banca started down the river. At the mouth of the Rio Chico we were suddenly fired upon by a party of about sixty insurgents, who were in concealed trenches at that point, several bullets entering the banca and many more struck in the water close by, but fortunately neither my companion nor myself were hurt. In the excitement of the moment the banca was overturned, and we took refuge behind it, firing with our revolvers whenever we could see any of the enemy. On account of the bullet holes in the banca it soon sank so low as to no longer afford protection, so removing shoes, leggings, and coat, I sank my revolver, and taking one of the bamboo poles from the side of the boat swam down stream, keeping under water as much as possible, a few minutes later a ball struck in the water just grazing my head, and I was stunned when the natives pulled me from the water to the bank, where Smith had gone some time previous.

We were taken before Lieutenant Texol, who was in command of the battalion located there, and by him sent to Tarlac, going by Magalang and Bamban. At Tarlac we were interviewed by Colonel Leba, who was English interpreter for Aguinaldo, and confined in the rear of the office of Brigadier-General Macabulos, who was secretary of war. We arrived at Tarlac October 23. Next day Smith, with several other prisoners who were then in Tarlac, was sent to Victoria. When we were captured I was suffering from dysentery, and owing to the exposure had grown rapidly worse, and was unable to be moved. I finally became so sick that it was evident that unless I obtained medicine I would certainly die. I endeavored in many ways to secure my return to Manila for treatment, even agreeing to sign an agreement similar to that signed by the prisoners who had formerly been released, knowing that it would not be binding. Just at this time a Spaniard, who was also prisoner, obtained some raw opium for me, and this, with the diet of rice which I was given, was so beneficial that I began to get better rapidly, and October 29 was sent to San Carlos, where November 1 there were assembled, as prisoners, 24 American soldiers, 3 deserters, 1 American and 1 English civilian. While I was in Tarlac a Spaniard showed me papers which proved that one William Miller, an American soldier, who had been a prisoner and had been released, was giving information to and acting as agent for the insurgents in Manila. I mention this that it may be investigated. In San Carlos we were separated into parties of four, and sent to different towns, my assistant (who had joined me there) going with myself and two others to Asingan, in the province of Pangasinan. We were quartered here from November 3 to November 13, on which latter date news having been received that the American cavalry, which was much feared, was in San Jose, we were sent to Binalonan. Here we were joined by ten others and sent north along the coast, making, however, frequent detours into the mountains, until we reached Candon, November 24.

When we were first captured and up to the time we started north our treatment by the Filipinos had been very kind. There we were placed under guard of new troops, who had never seen an American before and who seemed to take pleasure in maltreating us at every opportunity, and in Candon I resolved to escape at any cost. My companions were not in favor of this, as we had been told that in event of an escape recapture meant death, so I went alone. I concealed myself in the building by getting between the rafters and the roof on the morning of November 25, just as we were preparing to leave. Although the Filipinos searched long and thoroughly they failed to find me and finally came to the conclusion that I had left the building. Remaining in my hiding place until I succeeded in getting out of the building and reaching the rice fields east of the town I traveled south all that night and the following night, lying concealed during the day in the hedges. As I was barefooted and only half clothed, with feet and limbs cut, insect bitten, and blistered, I made slow progress and on the third night had not yet reached Santa Cruz. As I was nearing this town I encountered a sentry and although I killed him with a club he raised an alarm and I was recaptured, placed on a horse, and hurried back to Candon. After resting here until morning I was sent to Angaqui with a strong guard and a letter to Aguinaldo, who was supposed to be there. As he had gone on to Cervantes I was brought back and turned over to General Gregorio del Pilar at Concepcion. When the Americans advanced I was kept with Pilar's rear guard during the battle of Tila Pass and the retreat to Cervantes. Most of the time I was tied to a pole and carried like a pig by two natives to prevent my escape. At Cervantes Aguinaldo took personal command of Pilar's scattered forces and retreated through Kyan, Sagada, Bontoc, Talubin, and Bainan to Banane, in the district of Kiangan. This journey was the hardest of my captivity, as the natives were in an ugly mood and took pleasure in hitting the American with the butt of a gun or whetever else might be handy, even officers using their whips, which was the first time I had been treated other than kindly by them. Then, too, the road led over mountains and was covered with broken rocks, which made traveling barefooted very painful and as we frequently traveled twenty-four hours at a time without food or rest I was desperate and made many attempts to escape. Although I often got away from my guards I found the country impassable for a white man; even a native had to have a pass. We stayed in Banane until December 22, but as the natives of this section are hostile to the Filipinos food was very scarce, and horses, cats, and dogs were common food. Although the natives are armed only with spears they did not hesitate to attack the hundred armed men Aguinaldo had at this time, and he was obliged to fight them often.

December 22 Aguinaldo determined to return to Bontoc, send his wife, several other women, and his sick to Cervantes, where the Americans then were, and with his soldiers try to join General Tinio. I was told that I would be given freedom and allowed to accompany his wife. When he reached Talubin he found that the Americans had entered Bontoc, and his plans were impossible. I sent a note to the American commander at Bontoc, as the soldiers with Aguinaldo had left, asking him to come to Talubin. Aguinaldo returned about an hour later and we were taken to Bainan, and when the American forces reached Talubin Christmas morning we were returned to that place and I was free once more, having been a prisoner two months and five days.

I was retained by Major March of the second battalion, Thirty-third Infantry, United States Volunteers, to act as guide to those places where Aguinaldo had been and was expected to go. I remained with him until December 31, when, as he had no longer need of me, I started for Vigan, at which post I reported to Lieutenant Duffy January 8.

## APPENDIX No. 16.

### SAMPLE QUESTIONS OF COMPETITIVE SIGNAL-CORPS EXAMINATIONS IN ELECTRICITY.

What is the modern view of electricity?

What is the fundamental basis of the systems of electrical measurements?

What is the difference between the electro-static and electro-magnetic systems of units?

Define the meaning of the following terms, giving the units in which each is measured: Quantity of electricity, difference of potential, current, capacity, specific inductive capacity, work, magnetic induction, reluctance, impedance, conductance, resistance.

What is Faraday's theory of induction?

What is a condenser?

Upon what does the capacity of a condenser depend? Give formula for same.

Describe the phenomena of electric discharge.

What is the modern view of magnetism and what is meant by magnetic induction?

Discuss the magnetic properties of iron and steel, giving a rough sketch of the general character of the H. B. curve.

Discuss fully Ohm's law for the flow of a continuous current in a conductor—show that it applies to the entire circuit or to any part.

What is the general law of the magnetic circuit? Compare its terms with those of ohm's law for the electric circuit.

Upon what does electrical resistance depend? Give general formula for same.

Give law of flow of an alternating current in a circuit containing resistance, self-induction, and capacity, and illustrate graphically.

What are electrical oscillations? How produced?

Describe as fully as you can the system of wireless telegraphy as developed by Marconi.

Give the laws of the action of one electrical current on another.

Explain fully the modern theory of the voltaic cell.

What is meant by the polarization of a cell, and explain the practical methods of overcoming it?

Classify cells into open and closed circuit types, and show under what circumstances each type should be used.

Describe three types of cell used in telegraphy or telephony.

What is a dry cell? Describe any well-known type.

Upon what does the internal resistance of any cell depend?

Give the tests you would make to determine the constants and life of a voltaic cell.

What is a storage or secondary battery? Give the theory and describe any well-known commercial type.

Give practical rules for handling and use of storage cells.

Upon what does the electro-motive force of the continuous-current dynamo depend?

Describe an ordinary system of arc lighting.

Describe an ordinary system of incandescent lighting.

Describe fully the incandescent lamp; a brief line of its manufacture, its life, candle-power, and efficiency.

Describe a searchlight or projector.

Give a brief outline of a system of distribution used in street-railway practice, giving a diagram showing feeder system. Why and under what circumstances is a "booster" used?

Give briefly a description of a long-distance transmission power plant, and explain the various considerations and efficiencies of apparatus entering into the problem, assuming any set of conditions desired to make a discussion.

Define simplex, diplex, duplex, multiplex, and synchronous as applied to telegraphy, giving examples.

Explain fully the Morse system of telegraphy as used in the United States, giving a description of the necessary parts and a circuit diagram.

Explain the open-circuit system with diagram.

What is a transformer? How does it differ from an induction coil?

Describe a local and terminal office switch board and a complete wiring diagram for a terminal office having 10 main circuits, and using either gravity, storage, or dynamos as a source of energy.

Describe a duplex system, giving diagram and description of any instruments which are characteristic of the system.

What are the ordinary methods of working a submarine cable? Describe sending and receiving instruments.

Upon what does the speed of transmission over a cable depend? How may it be increased? How is a cable duplexed?

What is the ordinary working speed on land lines? On cables?

Describe some commercial type of submarine cable, giving general specifications.

What wires are used in the Signal Corps for its land work?

Discuss the subject of insulation resistance. How measured?

What effect has the weather on the working of a land line, and how corrected, practically?

Give the theory of the protection of land lines from lightning discharge and describe the ordinary methods.

Assume a hundred-mile No. 9 iron wire circuit with two terminal and three intermediate stations; required an estimate of cost with bill of material to completely equip and operate the line. Any assumption as to cost of labor or material and character of country can be made, but the question is intended to develop the candidate's familiarity with the various practical problems of line construction and equipment.

Give the theory of the telephone transmitter and receiver with diagram.

Give the wiring diagram of two common ways of using the telephone.

Explain the bridging bell system; the advantages and disadvantages of the party line; the common return system; the central station energy system.

In an ordinary telephone set, what faults and defects are liable to occur? How are they located and removed? Explain the subject of cross talk? How prevented?

How can a grounded circuit be connected to a metallic one?

Give a method of using the telegraph and telephone over same wire, explaining theory and giving wiring diagram.

What factors limit the long-distance transmissions of speech and what are the effects? Explain fully.

What is the KR law? Discuss its application to long-distance telephony.

Mention, with description, the application of electricity to the art of war, which you know of.

Give briefly your views upon the importance of submarine cables and land telegraph lines upon the art of war at the present time, illustrating by examples from the Spanish-American war.

## APPENDIX No. 17.

### PROGRESS MAP OF SIGNAL CORPS CABLE AND TELEGRAPH LINES IN THE PHILIPPINES.

(Bound at end of report.)

## APPENDIX No. 18.

### EXTRACTS FROM REPORT OF MAJ. FRANK GREENE, SIGNAL OFFICER, DEPARTMENT OF ALASKA.

On account of the late date (May 26, 1900) on which money was appropriated, very little of the material had arrived. By June 28 sufficient had arrived to warrant shipment to port Valdez of the requisite material to build 100 miles of line, and of sending a detachment to begin the work.

On July 1, at 1 a. m., Lieut. George C. Burnell, signal officer, United States Volunteers, with 14 men of the Signal Corps, United States Army, and the material, left Seattle in the steamer *Excelsior* for Port Valdez.

Although no official report has yet been received, I have been unofficially informed that the telegraph line had been finished to Swansport by July 15 and to a point 34 miles north of Port Valdez on August 15, and that the work was well in hand; thereafter (July 1) as fast as the material arrived in Seattle it was divided and marked for each separate station to be established on the Yukon River, at St. Michael, and at Cape Nome in such proportions as to provide complete material, other than cable, for building the telegraph line from the camp at Cape Nome on Norton Sound, via St. Michael, Unalaklik, and the portage to Kaltag, thence to Fort Gibbon; and in addition such supplies so far as could be obtained were shipped to the upriver posts, Rampart City, Fort Hamlin, Circle City, and Fort Egbert.

All of this material was loaded on board the United States army transport *Lawton* at Seattle, and upon July 23 the department signal officer with Second Lieut. Otto B. Grimm, signal officer, United States Volunteers, and 40 men of Company D, Signal Corps, United States Army, departed thence for St. Michael, Alaska, at which point they arrived August 2, 1900, upon which date the company was landed, reported to the department commander, and assigned to station at Fort St. Michael by General Orders, No. 20, Headquarters Department of Alaska, dated Fort St. Michael, Alaska, August 2, 1900.

Preparation was immediately made for carrying forward line construction. It had been intended to first construct a short stretch at Cape Nome to reach the cable at Safety Harbor, and the stretch over the Unalaklik-Kaltag portage, with a view to the completion of the through line, including cables, from Cape Nome to Kaltag this autumn, and thereafter to carry it forward to Fort Gibbon, reaching that point, if possible, before the intense cold of winter set in.

Upon a personal examination of the nature of the tundra to be passed over and the realization of the impossibility of transporting material across the portage until the tundra had frozen, it was determined to pursue the work up the Yukon from Kaltag to Fort Gibbon, with the expectation of at least completing the section to the Koyukuk River as soon as practicable; then to withdraw two detachments to complete the work over the portage, leaving another detachment from Fort Gibbon, which was afterwards to be assisted by a still further detachment upon completion of certain changes of troops, to complete as much of the line between Fort Gibbon and the Koyukuk River as would be found practicable this year.

On August 4 Lieutenant Grimm, commanding the company, was ordered to divide it into four detachments of 10 men each, each detachment to have an equal proportion, one with the other, of telegraph operators, linemen, and uninstructed men.

The four detachments were to begin work at Kaltag, Nulato, Fort Gibbon, and Cape Nome, and by Department Orders, No. 43, current series, two detachments of enlisted men from the Seventh Infantry, consisting of 25 men each, from Fort St. Michael, and a like detachment from Fort Gibbon, were ordered into the field for telegraphic line construction.

The combined detachments—Signal Corps and infantry—were officered as follows: That at Kaltag, by Second Lieut. Otto B. Grimm, signal officer, United States Volunteers; that at Nulato, by Lieut. William O. Smith, Seventh Infantry; that at Fort Gibbon, by Lieut. Percy M. Cochran, Seventh Infantry.

At the same time department orders were issued for the detail of a detachment of infantry from Cape Nome to build a line from that point to Port Safety, in combination with the fourth detachment of the Signal Corps, under Lieut. George W. Stuart, Seventh Infantry.

Arrangements having been made, between the Chief Signal Officer of the Army and the postmaster-general and superintendent of telegraphs of the Dominion of Canada, whereby the Canadian government agreed to extend its line from Dawson to the international boundary and the United States Government undertook to construct its line from Fort Egbert (Eagle City) to the international boundary, there to join, two men of the Signal Corps were ordered to report at Fort Egbert and department orders were issued for the construction of a military telegraph line from there to the boundary, a distance of 12 miles, by a detachment of the Seventh Infantry from Fort Egbert, which, including the signal men detailed, was to be commanded by Lieut. Wallace M. Craigie, Seventh Infantry.

The up river material having been marked, segregated, and loaded from the transport directly on the up river barge, the detachments for the four up river working parties were embarked aboard the river steamer *Leon* on August 8, 1900, but on account of a violent storm raging they were delayed in their departure until the evening of August 10, 1900, and are now at work upon their respective sections.

Lieutenant Grimm had completed 16 miles of line from Kaltag northward by September 11, and had moved to Nulato and begun building toward Kaltag for the convenience of moving his camp by dropping downstream with his boats.

Lieutenant Smith reported, on September 10, from his camp 12 miles north of Nulato, that by approximately September 16 he would have 12 miles of line completed.

Lieutenant Cochran was reported to be building cabins at points 20 miles apart, west of Fort Gibbon, preparatory to beginning fall and winter work which he expected to be able to pursue.

All of the officers before named having charge of telegraph construction have pursued their work with energy and skill, in a manner deserving commendation.

With a view to facilitate the distribution of the material from the various bases to which the material had been shipped, the United States army transport *Gen. Jeff. C. Davis*, a light-draft stern-wheel boat, was obtained from the Quartermaster's Department at Fort St. Michael, and, with additional material on board, was dispatched from Fort St. Michael on August 22, 1900, with orders to proceed to Kaltag, there to report to Lieut. Otto B. Grimm, signal officer, United States Volunteers, and distribute his material at such points as he should designate along the river bank as far as Nulato; then to report to Lieut. William O. Smith, Seventh Infantry, for the same service to the Koyukuk River and beyond; then to proceed to Fort Gibbon or vicinity to report to Lieut. Percy M. Cochran, Seventh Infantry, and to distribute the material from Fort Gibbon westward.

Upon completion of the duty at this latter point the transport was ordered to proceed to Novikaket, where a large supply of telegraph material had been landed, and to distribute east and west so as to complete and fill the gap between Lieutenants Smith and Cochran.

The benefit of such aid in the distribution to separate commands, in shortening their hauls and saving the animals, must be apparent.

The distribution as intended was effected, except that Lieutenant Smith only distributed his material from Nulato to the Koyukuk and stored the remainder at Picketts, leaving a gap unfilled between the Koyukuk and the western limit of Lieutenant Cochran's material. Should Lieutenant Cochran be able this winter to work westward of the point to which his material now reaches this failure will hamper him and delay his work.

The telegraph line from Nome to Port Safety, the cable end, was begun on August 20, 1900, and prosecuted with vigor, following the tundra close to the beach, over the headland at Cape Nome, and along the sand spit to Port Safety, a distance of 24 miles, and was completed on August 31, 1900.

When the project of cabling between Cape Nome and St. Michael and between St. Michael and Unalaklik became known, early in the summer, alarming reports were given out by seafaring officers concerning the impossibility of maintaining a telegraph cable in Arctic waters, not only from the action of the shore ice at the break-up in the spring, but also from the grinding effects of large bergs grounding in deeper waters.

The best authorities in San Francisco were consulted, but opinions received were undecided and diverse.

It was believed that with proper caution and good judgment in selecting the landing points there was at least a chance of escaping some of the threatening disasters, and it was felt that the United States Government would not be justified in abandoning such a greatly needed enterprise without giving it a fair trial.

From examination of the maps and charts, the mouth of the Unalaklik River and the bay of St. Michael gave promise of protection of the cable ends, while in the vicinity of Cape Nome the exposed beach seemed to be doubtful; but some 20 miles east of Cape Nome the slough of Port Safety, with a deep, narrow channel protected on each side by shoal water, promised adequate protection.

For the purpose of inspecting and locating the cable ends and fixing the sites of the cable huts, the steamer *Argo* was chartered by the Quartermaster's Department, and on August 13, 1900, the Department signal officer proceeded to Unalaklik, and after examining the channel and mouth of the river a point was selected inside the mouth of the river for the cable landing.

Port Safety was visited and examined on August 15, 1900, and a point selected inside of the slough, on the western side.

The whole sand spit at the mouth of the slough was found to be laid out in town lots of the city of Port Safety, but it was found that the municipal government had reserved a lot for public buildings, on which lot the cable house was appropriately located.

The same vessel was used between August 19 and 21, 1900, in conveying to the mouth of the Unalaklik River several hundred iron telegraph poles, to build 35 miles of the way over the portage, and all such other material as wire, insulators, etc., as had then arrived at St. Michael.

In the inception it was expected that the telegraph line from Kaltag to Fort Egbert would follow closely the Yukon River. Examination of the map and information received show that between Fort Hamlin and Circle City there are no trading posts nor river steamboat stations or landings. A greater part of the river between these two points is occupied by the Yukon flats. The river from Fort Hamlin to Fort Yukon and from the latter point to Circle City forms approximately two sides of a triangle of which the base extends from Fort Hamlin to Circle City. Following down the right bank of the Yukon, which is at some points 10 miles wide, through the flats, one comes upon the mouth of the Porcupine River, which has been known in seasons of spring freshets to break its bounds so that its mouth has been 50 miles in width. Following down the left bank of the river one finds himself upon an extended plain of impassable tundra, the river edge of which, on account of the peculiarity of the channel following the right bank, is for the greater part of the distance many miles from the steamboat channel. On account of these two great difficulties and dangers one finds himself thrown upon the interior of the country for the practicability of constructing a line that, first, it might be built, and, second, be maintained.

With all this in view a small party of reconnoissance and exploration, under the command of Lieut. H. Erickson, Seventh Infantry, and including in its personnel Mr. William Yannart, assistant superintendent of telegraph construction, will leave Rampart City, via Fort Hamlin, in the present fall, for the purpose of locating a feasible route between the latter points, via the head of Birch Creek, to Fort Egbert and Circle City.

The superintendent of construction has been ordered to bear in mind the necessity of packing the material, or hauling if it be possible; providing telegraph poles from the timber; the practicability of travel along the line for its maintenance, and the erection of log cabins in the future for repair stations at suitable points about 50 miles apart.

The cable ship *Orizaba* arrived upon September 16 in a violent gale and anchored in the harbor of St. Michael.

On September 17, the gale having subsided, the end of the cable was landed and connection made with the telegraph office at Fort St. Michael by 1 p. m., the cable tested clear, and telegraphic communication was established through the entire length of 130 miles destined for laying to Safety Harbor.

The ship started to lay the cable to Safety Harbor at 2.45 p. m., and at 3.43 p. m. of the same day ran upon a rock about 4 miles distant from the cable end, and has not been floated at the present time.

At this date approximately 100 miles of the cable is upon the Alaska Commercial Company's steamer *Margaret*, 70 miles upon the barge *Nome*, and 10 miles still in the *Orizaba*.

As nearly as can be determined, it is in ten pieces of varying lengths. Its condition may be stated as good so far as conductivity and insulation are concerned, but in great part, on account of the numerous small coils in which it has been placed, it will not recoil smoothly for laying.

At a conference on September 19 between the representatives of the cable owners and the salvors, I proposed to take 45 miles of cable to lay between St. Michael and Unalaklik at the risk of the United States, provided I should first examine and test the cable and find that length in one piece in perfect condition and in such condition as to coiling as would in my judgment be safe to attempt the laying; to agree to pay for the same $21,500 and to pay the expense of laying, which I estimated would be $10,000, the price of the cable not to be paid until the title to the cable was unclouded.

After conference there was prepared a draft of the sense of the salvors and presented to the cable representative for his consideration and submission as follows:

"We will deliver to the United States enough cable to be laid at its own risk to Unalaklik from St. Michael for $21,500 and will agree to lay the Nome cable from the cable now at St. Michael in the spring of 1901.

"The amount of $21,500 plus the charge of laying the Unalaklik cable to be deducted from the contract price, if successful, and the question of salvage to be left to mutual agreement or decision of the courts before the United States pays for the cable."

To this proposition the cable owners would not agree, and advanced an offer to deliver to the United States 45 miles of cable to lay to Unalaklik for the sum of $21,500, which sum was not to be paid to anyone until the whole question of salvage should be finally settled. To this the salvors would not agree, nor would they agree to anything that would not contain a stipulatfon that the cable owners should lay the Safety Harbor cable from that recovered from the wreck.

Agreement being found impossible, no cable can be laid this year nor until either the title to the present unlaid cable is quieted or a new contract and cable be made for 1901. Accordingly, with a view to establishing telegraphic communication between department headquarters and the up-river posts, steps were at once taken looking to the construction of a land line between St. Michael and Unalaklik. The material is in process of shipment, and the line will be built in the coming winter.

Telegraph stations are established at the present date at Nome City, Fort Davis (Camp Nome), and Port Safety, and cable offices have been erected at Fort St. Michael and Unalaklik. Telegraph houses are in course of erection or are completed at Kaltag, Nulato, Cochranes, and Rampart City.

At the three cable ends the operators will be comfortably located in well-built houses, with double floors and sides and windows, with corrugated iron on the outside, well heated, and rationed with particular attention to antiscorbutics for the prevention of possible scurvy.

It is intended to change the stations of these men frequently, so that all may have, in their turn, isolation and the society of their fellows.

Experience has shown that telegraph material intended for Alaska, whether for construction, repairs, or supply, should leave Seattle or San Francisco not later than July 15 of each year, on account of the danger of rough weather in the early fall, delaying the unloading of steamers, the possible prevention of another trip, and also the danger of their being left behind at the home ports in the later shipments.

Tabulated statement of telegraphic material distributed to September 5, 1900.

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| | Wire. | Brackets and plugs. | Insulators. | Spikes. | Iron poles. |
|---|---|---|---|---|---|
| | *Miles.* | | | *Pounds.* | |
| z | 320 | 17,736 | 12,972 | 1,800 | 1,500 |
| | 22 | 500 | 1,000 | ........ | 500 |
| | 55 | 800 | 1,503 | 200 | 869 |
| | 60 | 2,150 | 3,495 | 200 | 550 |
| | 80 | 3,580 | 4,823 | 400 | .......... |
| | 150 | .......... | .......... | .......... | .......... |
| to | 110 | 4,940 | 6,157 | 800 | .......... |
| n | 130 | 3,740 | 11,073 | 600 | .......... |
| ity | 35 | .......... | 2,171 | 400 | .......... |
| | 120 | 1,940 | 7,485 | 900 | .......... |
| rt | 220 | 7,220 | 12,209 | 900 | .......... |
| lin | 85 | .......... | 6,197 | 900 | .......... |
| l | 1,237 | 42,606 | 69,085 | 7,100 | 3,419 |

n addition the requisite instruments, office equipment, and repair tools to all
bove stations excepting Rampart City, Fort Hamlin, and Circle City.

nt plans for telegraphic communication in this department look to a contin-
e from Nome via St. Michael and the Yukon Valley, connecting the present
posts on such a line to Fort Egbert, thence to Port Valdez.

tlet is provided for other than that from Fort Egbert to the Canadian lines,
ventually reach the United States over the Canadian Pacific Railroad Com-
wires. This measure causes all telegrams from Alaska to the United States to
er foreign lines in a foreign country.

ll-American route will be by means of a cable from Port Valdez, Alaska, via
to the great telegraph systems of the United States, either at Port Angeles,
which is the nearest point, or at Seattle or San Francisco.

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# REPORT OF THE CHIEF OF THE RECORD AND PENSION OFFICE.

# REPORT

### OF THE

# CHIEF OF THE RECORD AND PENSION OFFICE.

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RECORD AND PENSION OFFICE,
*War Department, October 1, 1900.*

SIR: The work of the Record and Pension Office for the fiscal year ended June 30, 1900, is represented in part by the following table:

*Number of cases received and disposed of.*

| | |
|---|---|
| From the Pension Office | 132, 627 |
| From the Auditor for the War Department | 59, 461 |
| Remuster cases | 3, 770 |
| Desertion cases | 2, 581 |
| All other cases, miscellaneous | 63, 397 |
| Total | 261, 836 |
| On hand June 30, 1900 | None. |

As the Record and Pension Office did not participate in the work of the organization of the forces brought into existence during the war with Spain, or in the administrative action connected with military operations in the field, its work was not increased during the continuance of the war, but it was largely augmented after the close of hostilities and the muster out of the volunteer forces by the receipt of the records of the disbanded organizations.

In the act of April 22, 1898, under which the volunteer army in service during the Spanish war was created, it was provided that upon the disbandment of the volunteer and militia organizations the records pertaining to them, together with the reports of medical officers serving with the volunteer troops and the records kept by such officers, should be filed in the Record and Pension Office. The transfer of the records from other bureaus of the War Department began in December, 1898, and up to June 30, 1899, 4,144 calls from the Commissioner of Pensions for military histories of officers and enlisted men of Spanish war regiments, and 11,394 similar calls from the Auditor for the War Department, were received and answered. During the fiscal year ended June 30, 1900, 29,700 such calls were received from the Commissioner of Pensions and 44,741 from the Auditor for the War Department.

These calls for the military histories of officers and enlisted men in service during the war with Spain have resulted in a very material increase in the work of the office. But a more material increase in the work has resulted from the general correspondence relating to organizations and individuals of the volunteer forces in service during the

Spanish war, involving, as it does, many questions which, owing to legislation relative to organizations and individual service peculia that war, are new to the Department and necessarily require care consideration and administrative action.

Notwithstanding the very considerable increase in the work of office as a result of the Spanish war, the public business has b promptly dispatched, nearly 93 per cent of the cases received duri the fiscal year having been disposed of within twenty-four hours fr the time they reached the office, and at the close of business hours the 30th of June not one case remained unacted upon.

The term "remuster cases," as used in the preceding table, refers cases arising under the act of Congress approved February 24, 18 for the relief of certain officers and enlisted men of the volunte forces in service during the war of the rebellion. The "deserti cases" referred to in the same table include some few applications f removal of the charge of desertion from the records of soldiers of t Spanish war; but the applications generally were those of soldiers the civil war for relief under the act of March 2, 1889, which relat exclusively to soldiers of the Mexican war and the war of the rebellio Neither the "remuster" act nor the act relating to the removal of t charge of desertion has any application to officers or enlisted men i service during the war with Spain.

The cases classified in the table as "miscellaneous" include applic tions for original discharge certificates; for certificates in lieu of lo discharges under the act of Congress approved March 3, 1873; for ce tificates of discharge in true name under the act of April 14, 1890; fo recognition as veteran volunteers under reenlistment during the civ war; for medals of honor for ex-soldiers of the civil war; inquiries fro the Commissary-General of Subsistence, the Quartermaster-Gener and Paymaster-General of the Army, the adjutants-general of State the Commissioner of the General Land Office, the Comptroller of th Treasury, the Court of Claims, the Civil Service Commission, th Grand Army of the Republic, the Loyal Legion, and kindred patrioti societies, the Soldiers' Homes, and the general correspondence of th office relative to organizations and individuals which can not b classified.

Among the miscellaneous cases may also be mentioned the thousand of inquiries annually received from individual Senators and Representatives relative to volunteer officers and enlisted men or the organizations to which they belonged. These, like other inquiries, are always promptly answered, and during the existence of the Record and Pension Office there has been no occasion for a Senator or Representative to request that a case be made "special" or to inquire as to the cause of delay in the action of this office.

Another important feature of the work of the office consists in the preparation of reports in response to calls from various committees of Congress for information and advice relative to pending legislation. Many of these reports deal with subjects of national importance, involving the possible expenditure of large sums of money, and demanding close study and exhaustive investigation, while all the reports are more or less voluminous and require much care in their preparation. During the last fiscal year, covering the first session of the Fifty-sixth Congress, 561 reports were furnished to the committees of the two Houses of Congress.

A considerable tax upon the time of the clerical force of the office is also due to the prosecution by the United States in the criminal courts of persons suspected of attempting to defraud the Government in the presentation and prosecution of false and fraudulent claims for pension. In these cases it is necessary that the original rolls and other official records of the service upon which the claim is based shall be produced at the trial of the accused persons, and upon the receipt of a summons from the proper legal authority a clerk is sent with the records for the purpose of exhibiting them in court and to testify with regard to their contents. Considerable time is required for the necessary examination of the records in preparation for the trial, but much more time is consumed in travel and the delays of judicial proceedings. However, besides the loss of time of the clerks from their ordinary official duties, these prosecutions involve no expense to the War Department, the necessary expenses of travel and subsistence being paid from the appropriations for the Department of Justice.

## PUBLICATION OF WAR RECORDS.

This being the first annual report of the Record and Pension Office in which the work of the publication of the "Official Records of the Union and Confederate Armies" has been included, it is deemed proper to state briefly the history of the work from its inception.

The work of preparing the records of the civil war for publication was begun in 1864 by Col. E. D. Townsend, Assistant Adjutant-General (subsequently Adjutant-General of the Army), under authority of a resolution of Congress approved May 19, 1864. Under this authority Colonel Townsend caused copies to be made of battle reports on file in his office and steps to be taken to collect missing records.

The resolution of May 19, 1864, was repealed by a resolution approved July 27, 1866, under the provisions of which Hon. Peter H. Watson was appointed by the Secretary of War to supervise the preparation of the records and to formulate a plan for their publication, but he performed no service under this appointment, which expired by limitation July 27, 1868.

The first decisive step taken toward the publication of the records was when, by an act approved June 23, 1874, an appropriation was made "to enable the Secretary of War to begin the publication of the official records of the war of the rebellion, both of the Union and Confederate armies."

Under this act the preliminary work of preparation was resumed by Adjutant-General Townsend. Subsequently, under meager appropriations, the work was continued in a somewhat desultory manner by various officials until December 14, 1877, when the Secretary of War, perceiving that the undertaking needed the undivided attention of a single head, detailed Capt. Robert N. Scott, Third United States Artillery (subsequently major and lieutenant-colonel of that regiment), to take charge of the work.

The act of June 23, 1874, enlarged upon the first scheme of publication. On this more comprehensive basis it was determined that the work should include not only the battle reports, correspondence, etc., in possession of the War Department, but also "all official documents that can be obtained by the compiler, and that appear to be of any historical value." Colonel Scott systematized the work, and, up his recommendation, the Secretary of War approved the followi order of publication:

> The first series will embrace the formal reports, both Union and Confederate the first seizures of United States property in the Southern States, and of all milit operations in the field, with the correspondence, orders, and returns relating cially thereto, and, as proposed, is to be accompanied by an atlas.
>
> In this series the reports will be arranged according to the campaigns and seve theaters of operations (in the chronological order of events), and the Union rep of any event will, as a rule, be immediately followed by the Confederate accoun The correspondence, etc., not embraced in the "reports" proper will follow (f Union and next Confederate) in chronological order.
>
> The second series will contain the correspondence, orders, reports, and return Union and Confederate, relating to prisoners of war, and (so far as the milit authorities were concerned) to State or political prisoners.
>
> The third series will contain the correspondence, orders, reports, and returns the Union authorities (embracing their correspondence with the Confederate officia not relating specially to the subjects of the first and second series. It will set for the annual and special reports of the Secretary of War, of the general in chief, a of the chiefs of the several staff corps and departments; the calls for troops, and t correspondence between the National and the several State authorities.
>
> The fourth series will exhibit the correspondence, orders, reports, and returns the Confederate authorities, similar to that indicated for the Union officials, as the third series, but excluding the correspondence between the Union and Confe erate authorities given in that series.

The first volume of the records was issued in the early fall of 18 The act approved June 16, 1880, provided for the printing and bin ing of 10,000 copies of the work, and that 7,000 copies should be f the use of the House of Representatives, 2,000 copies for the use o the Senate, and 1,000 copies for the use of the Executive Department Under this act the first five volumes of the records were distribute All subsequent volumes have been distributed under the act approv August 7, 1882, which provides as follows:

> The volumes of the Official Records of the War of the Rebellion shall be distribut as follows: One thousand copies to the Executive Departments, as now provided law. One thousand copies for distribution by the Secretary of War among offic of the Army and contributors to the work. Eight thousand three hundred copi shall be sent by the Secretary of War to such libraries, organizations, and individua as may be designated by the Senators, Representatives, and Delegates of the Fort seventh Congress. Each Senator shall designate not exceeding twenty-six, and ea Representative and Delegate not exceeding twenty-one, of such addresses, and th volumes shall be sent thereto from time to time as they are published, until the pu lication is completed. Senators, Representatives, and Delegates shall inform th Secretary of War in each case how many volumes of those heretofore published the have forwarded to such addresses. The remaining copies of the eleven thousand t be published, and all sets that may not be ordered to be distributed as provide herein, shall be sold by the Secretary of War for cost of publication, with 10 per ce added thereto, and the proceeds of such sale shall be covered into the Treasury. I two or more sets of said volumes are ordered to the same address, the Secretary War shall inform the Senators, Representatives, or Delegates who have designat the same, who thereupon may designate other libraries, organizations, or individual

Colonel Scott died on March 5, 1887, and was succeeded by Col. H. M. Lazelle, Twenty-third United States Infantry, who continued in charge of the work of publication about two years, when, by an act approved March 2, 1889, it was provided that the preparation and publication of the records should be conducted, under the direction of the Secretary of War, by a board of three persons, composed of an officer of the Army and two civilian experts, to be appointed by the Secretary of War.

Maj. George B. Davis, Judge-Advocate, United States Army, was appointed by the Secretary of War as the military member, and Leslie J. Perry, of Kansas, and Joseph W. Kirkley, of Maryland, as the civilian members of the board of publication. This board assumed direction of the publication in July, 1889. On July 1, 1895, Maj. George W. Davis, Eleventh United States Infantry (subsequently lieutenant-colonel Fourteenth United States Infantry and now a brigadier-general, United States Volunteers), relieved Maj. George B. Davis as the military member and president of the board of publication. Subsequently Col. (now Brig. Gen.) Fred C. Ainsworth, Chief of the Record and Pension Office, War Department, was appointed as the military member and president of the board, relieving Brig. Gen. George W. Davis June 1, 1898.

On December 1, 1898, under the provisions of the sundry civil act of July 1, 1898, the board of publication was dissolved, and, by direction of the Secretary of War, the work of publication was continued under the charge of the Chief of the Record and Pension Office.

By operation of law (act of February 24, 1899, "making appropriations for the legislative, executive, and judicial expenses of the Government for the fiscal year ending June 30, 1900"), the War Records Office, which had for many years been in charge of the work of compiling and publishing the official records of the Union and Confederate armies, was merged into the Record and Pension Office on July 1, 1899.

On July 1, 1898, shortly after the work of publication had been assumed by the Chief of the Record and Pension Office, the force employed in the War Records Office was reduced to 22 employees, about one-third of its previous number. During the fiscal year ended June 30, 1899, three volumes were compiled, and, together with six others, were put in type, involving the reading of over 30,000 pages of proof and revises; four volumes were printed and bound and four were distributed; 54,027 copies of volumes were received from the Public Printer, and 46,974 books and parts of plates of the atlas were sold or distributed. During the same period an "Index to Battles, Campaigns, etc.," was published.

During the fiscal year ended June 30, 1900, one volume was put in type and seven were indexed, involving the preparation of about 500 pages of index and the reading of over 4,500 pages of proof and revises; eleven volumes were printed, bound, and distributed, completing the publication, with the exception of the general index; 133,949 books were received, and 117,216 were sold or distributed. The "Additions and Corrections to the Rebellion Records" was compiled and put in type, and work was commenced upon the general index to the entire publication.

In former annual reports attention was invited to the accumulation of a large number of volumes of these records in the War Department, resulting from the death of individuals or the abandonment or suspension of organizations designated to receive them. Under the several acts providing for the distribution of the work, the volumes thus accumulated could not be disposed of without further legislation by Congress. In order to supply the demand for these records, it was recommended that Congress be asked for authority to reprint certain volumes and parts so as to make complete sets of the miscellaneous numbers on hand, and that these sets be apportioned among the members of the Fifty-sixth Congress for distribution. This recommendation met the approval of Congress, and a clause was included in t sundry civil act approved June 6, 1900, authorizing the Secretary War to furnish each Senator, Representative, and Delegate of th Fifty-sixth Congress, who had not already become entitled by law t receive the work, with three sets, and all other Senators, Representatives, and Delegates of that Congress, who had already been supplied with two sets. Under this law over 135,000 volumes of the work a about 1,040 sets of the atlas will be distributed. The work of distribution was commenced early in July, 1900, and will be continued a rapidly as possible.

It is proper to add that from 1874, when the first appropriation wa made for the publication of the Official Records of the War of th Rebellion, to June 30, 1898, 112 books and an atlas of 178 plates wer published and $2,610,921 expended, and that during the two years i which the work has been under the control of the Chief of the Recor and Pension Office 15 books and an "Index to Battles, Campaign etc.," have been published and $187,230.21 expended, making the tot number of books published 127 and the expenditures $2,798,151.21 t June 30, 1900.

## INDEX-RECORD CARD WORK.

Besides the transaction of the increased current business of the offic and the prosecution of the work of the publication of the war records, such portion of the clerical force as has been available for the purpose has been actively engaged in the work of reproducing, by the index-record card system, the records of individual military service and medical and surgical treatment. This system has been fully described in previous annual reports.

At the date of the last annual report the work of carding the records of the Revolutionary war and subsequent wars down to the beginning of the war with Spain had been practically completed, and the carding of the records of the latter war had been begun.

At the close of the last fiscal year about 40 per cent of the military records of the Spanish war volunteers had been carded, and at the date of this report the work is well advanced, with the prospect that the carding of the military records will be completed during the present fiscal year.

The carding of the principal medical records of the war with Spain has been completed and work has been begun on the auxiliary medical records. These auxiliary records are of such a character that their reproduction by the index-record card system is necessarily slow, but they contain data that in many instances are necessary to supplement other records of medical and surgical treatment, and that it would be unsafe to omit from the record cards.

The index-record card work for the fiscal year included the preparation of 959,649 military cards and 120,479 medical cards, making, with the number prepared in previous years, a total of 41,616,088 of the former and 7,368,350 of the latter class, aggregating 48,984,438 index-record cards prepared up to and including June 30, 1900.

In addition to the index-record cards, 145,594 reference cards were made during the fiscal year from miscellaneous and fragmentary records of the war of 1812. These records are of such a character that they can not well be reproduced in the ordinary form of index-record cards, but by the system adopted any name, however incidentally appearing thereon, can be readily referred to.

### CLERICAL FORCE.

It was remarked in the last annual report that by the reproduction of the records of individual military service by the index-record card system, the application of that system to the current correspondence, and the adoption of other improved methods, the business of the office had been so expedited that it had been possible to materially reduce the clerical force. On the recommendation of the Chief of the Record and Pension Office a reduction of 32 was made in the clerical force of the office for the current fiscal year, representing a saving in salaries of $35,340 per annum. This added to the previous reduction of 300 in 1894, 50 in 1895, and 25 in 1897, makes a total reduction of force in the Record and Pension Office since its organization in 1892 of 407 clerks, representing an annual saving of over $460,000 in salaries alone, besides the reduction of 42 employees of the War Records Office previously mentioned. Adding to the savings in salaries in the Record and Pension Office alone the savings effected in contingent and other expenses, it is found that the cost of maintaining the office has been permanently reduced by at least $500,000 per annum.

In all of the reductions that have been made in the clerical force of the office the selections for discharge have been based strictly upon the efficiency records of the clerks, a liberal allowance being made in the ratings on account of honorable military or naval service.

Very respectfully,

F. C. Ainsworth,
*Brigadier-General, United States Army,*
*Chief, Record and Pension Office.*

The Secretary of War.

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